BEA WebLogic Enterprise

Installation Guide

WebLogic Enterprise 5.1
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May 2000

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BEA WebLogic Enterprise Installation Guide

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About This Document

This document explains how to install the BEA WebLogic Enterprise™ T-Engine software, J-Engine software, Encryption Package software, and BEA Jolt™ software. The topics are organized as follows:

- Part I, “Before You Install,” which contains the following topic:
  - Chapter 1, “Preparing to Install the WebLogic Enterprise Software”
- Part II, “T-Engine Installation,” which includes the following topics:
  - Chapter 2, “WebLogic Enterprise T-Engine Installation on Windows Systems”
  - Chapter 3, “WebLogic Enterprise T-Engine Installation on UNIX Systems”
  - Chapter 5, “BEA Administration Console Startup”
  - Chapter 4, “WebLogic Enterprise T-Engine Postinstallation Considerations”
  - Chapter 6, “WebLogic Enterprise T-Engine Platform Data Sheets”
- Part III, “J-Engine Installation,” which includes the following topics:
  - Chapter 7, “Overview of Installing WebLogic Server 5.1”
  - Chapter 8, “Installing WebLogic Server Using the InstallShield Distribution (Windows NT)”
  - Chapter 9, “Installing WebLogic Server from a Zip Archive (UNIX, Windows NT)”
  - Chapter 10, “Setting Up and Starting WebLogic Server 5.1”
  - Chapter 11, “Installing WebLogic jDriver for Oracle”
- Part IV, “Encryption Package Installation,” which includes the following topics:

- Chapter 12, “WebLogic Enterprise Encryption Package Installation on Windows Systems”
- Chapter 13, “WebLogic Enterprise Encryption Package Installation on UNIX Systems”

- Part V, “BEA Jolt Installation,” which includes the following topics:
  - Chapter 14, “Preparing to Install BEA Jolt”
  - Chapter 15, “Installing BEA Jolt”
  - Chapter 16, “Configuring the BEA Jolt System”
  - Chapter 17, “Post Installation Considerations for BEA Jolt”

What You Need to Know

This document is intended mainly for system administrators and installers who will install one or more WebLogic Enterprise server, client, or administration components.

e-docs Web Site

The BEA WebLogic Enterprise product documentation is available from the BEA Systems, Inc. corporate Web site. From the BEA Home page, click the Product Documentation button or go directly to the “e-docs” Product Documentation page at http://e-docs.bea.com.

How to Print the Document

You can print a copy of this document from a Web browser, one file at a time, by using the File—>Print option on your Web browser.

A PDF version of this document is available on the WebLogic Enterprise documentation Home page on the e-docs Web site (and also on the documentation CD). You can open the PDF in Adobe Acrobat Reader and print the entire document (or a portion of it) in book format. To access the PDFs, open the WebLogic Enterprise documentation Home page, click the PDF Files button and select the document you want to print.

If you do not have Adobe Acrobat Reader installed, you can download it for free from the Adobe Web site at http://www.adobe.com/.

Related Information

Before installing the BEA WebLogic Enterprise software, read the *BEA WebLogic Enterprise Release Notes*.

For more information about topics covering CORBA, Java 2 Enterprise Edition (J2EE), BEA Tuxedo®, distributed object computing, transaction processing, C++ programming, and Java programming, see the *WebLogic Enterprise Bibliography* in the WebLogic Enterprise online documentation.

Contact Us!

Your feedback on the BEA WebLogic Enterprise documentation is important to us. Send us e-mail at **docsupport@bea.com** if you have questions or comments. Your comments will be reviewed directly by the BEA Systems, Inc. professionals who create and update the WebLogic Enterprise documentation.

In your e-mail message, please indicate that you are using the documentation for the BEA WebLogic Enterprise 5.1 release.

If you have any questions about this version of BEA WebLogic Enterprise, or if you have problems installing and running BEA WebLogic Enterprise, contact BEA Customer Support through BEA WebSUPPORT at www.bea.com. You can also contact Customer Support by using the contact information provided on the Customer Support Card, which is included in the product package.

When contacting Customer Support, be prepared to provide the following information:

- Your name, e-mail address, phone number, and fax number
- Your company name and company address
- Your machine type and authorization codes
- The name and version of the product you are using
- A description of the problem and the content of pertinent error messages

Documentation Conventions

The following documentation conventions are used throughout this document.

Convention	Item
boldface text	Indicates terms defined in the glossary.
Ctrl+Tab	Indicates that you must press two or more keys simultaneously.
italics	Indicates emphasis or book titles.

Convention	Item

`monospace text`	Indicates code samples, commands and their options, data structures and their members, data types, directories, and filenames and their extensions. Monospace text also indicates text that you must enter from the keyboard.
	Examples:
	`#include <iostream.h> void main ( ) the pointer psz`
	`chmod u+w *`
	`\tux\data\ap`
	`.doc`
	`tux.doc`
	`BITMAP`
	`float`

`monospace boldface text`	Identifies significant words in code. *Example*: `void` **`commit`** `( )`
`monospace italic text`	Identifies variables in code. *Example*: `String` *`expr`*
UPPERCASE TEXT	Indicates device names, environment variables, and logical operators. *Example*s: LPT1 SIGNON OR
`{ }`	Indicates a set of choices in a syntax line. The braces themselves should never be typed.

`[ ]`	Indicates optional items in a syntax line. The brackets themselves should never be typed.
	Example:
	`buildobjclient [-v] [-o name ] [-f` *`file-list`*`]...`
	`[-l` *`file-list`*`]...`

`|`	Separates mutually exclusive choices in a syntax line. The symbol itself should never be typed.

Convention	Item

. . .	Indicates one of the following in a command line:
	■ That an argument can be repeated several times in a command line
	■ That the statement omits additional optional arguments
	■ That you can enter additional parameters, values, or other information
	The ellipsis itself should never be typed.
	Example:
	`buildobjclient [-v] [-o name ] [-f file-list]...`
	`[-l file-list]...`

. . .	Indicates the omission of items from a code example or from a syntax line. The vertical ellipsis itself should never be typed.

Part I Before You Install

1 Preparing to Install the WebLogic Enterprise Software

BEA WebLogic Enterprise is a sophisticated software product. It should not be installed without proper planning.

This topic includes the following sections:

- Checking the WebLogic Enterprise Product Boxes
- WebLogic Enterprise CDs #1 and #2 Software Components
- Hardware and Software Prerequisites for the WebLogic Enterprise Software
- Overview of Upgrade Considerations
- Managing Files and Databases
- Selecting Directories for the WebLogic Enterprise Files
- Selecting an Administrative Password
- Configuring the WebLogic Enterprise System for Windows 2000 or NT
- Configuring the UNIX Operating System for the WebLogic Enterprise Software

Checking the WebLogic Enterprise Product Boxes

The WebLogic Enterprise software comes in two boxes:

- The smaller box contains the following four compact discs (CDs):
  - CDs #1 and #2, which contain the WebLogic Enterprise "T-Engine" software components. These components enable you to build scalable applications based on the following technologies: CORBA C++, CORBA Java, J2EE (EJBeans, RMI, JNDI, JDBC), and BEA Tuxedo.

    CD #1 contains the T-Engine technologies for installation on Microsoft Windows 2000 systems, Windows NT systems, HP-UX systems, or Sun Solaris 2.6 or Solaris 7 systems (standard mode or compatibility mode). Using CD #1, you can also install WebLogic Enterprise T-Engine client components (only) on Windows 98 or Windows 95 systems.

    CD #2 contains the T-Engine technologies for installation on Compaq Tru64 systems, or IBM AIX systems, or SCO Unixware systems.
  - CD #3, which contains the WebLogic Enterprise "J-Engine" software components and BEA Jolt™.

    The J-Engine software enables you to build scalable applications based on J2EE technologies. The features include Web application servers, servlets, Java Server Pages, EJBeans, and connectivity to WebLogic Enterprise T-Engine applications via the WebLogic Enterprise Connectivity (sometimes called WLEC) product.

    BEA Jolt is a Java-based interface to the BEA Tuxedo system that extends the functionality of existing Tuxedo applications to include Intranet- and Internet-wide availability.
  - The WebLogic Enterprise 5.1 Online Documentation CD, which documents the T-Engine features, the J-Engine features, and the Jolt features.
- The larger box contains the following printed documents and diskettes:
  - *BEA WebLogic Enterprise Release Notes*
  - *BEA WebLogic Enterprise Installation Guide* (this document)

- *BEA WebLogic Enterprise Getting Started*
- *BEA WebLogic Server Introduction*
- The quick reference Customer Support Agreement
- BEA software license agreement
- Two separate 3.5-inch diskettes that contain the product licenses for the WebLogic Enterprise 5.1 software, as summarized in the following table:

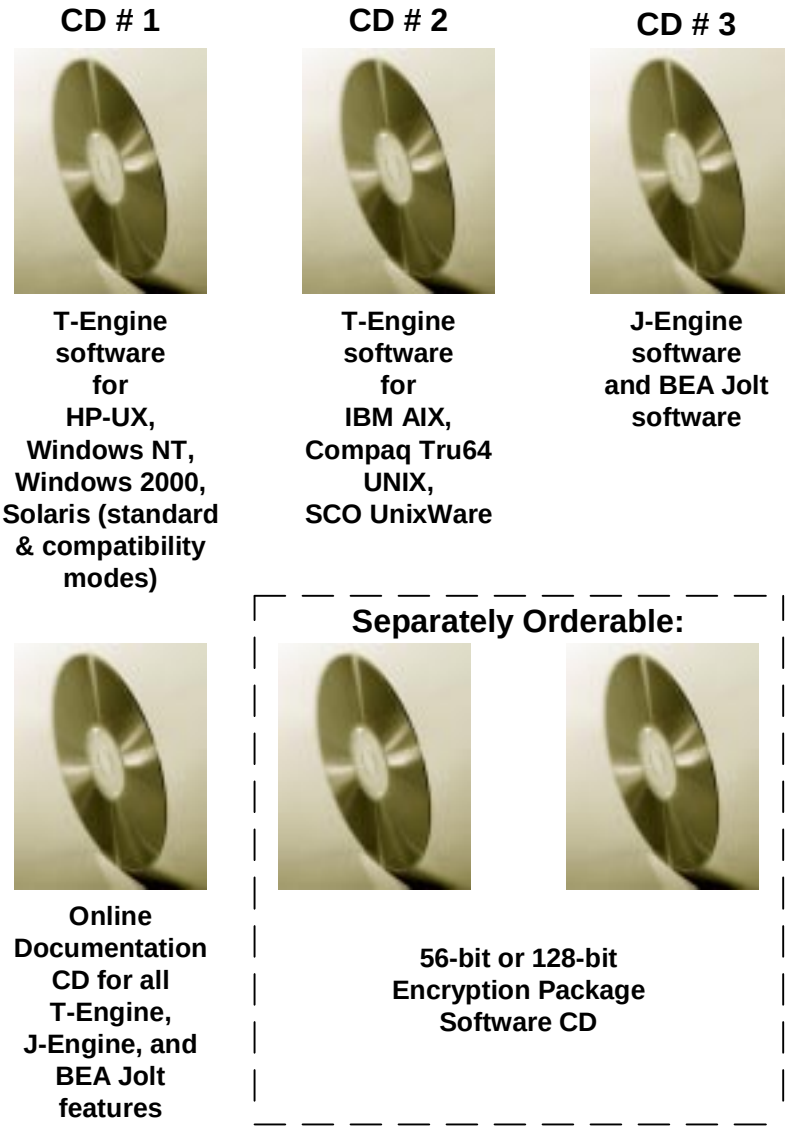
If you have purchased....	**You have a license to use...**
WebLogic Enterprise CORBA and ATMI (SDK or run-time license)	■ T-Engine CORBA C++ and Java, and ATMI software ■ J-Engine software for 30 days ■ BEA Jolt software for 30 days
WebLogic Enterprise CORBA, ATMI, and J2EE (SDK or run-time license)	■ T-Engine CORBA C++ and Java, and ATMI software ■ T-Engine J2EE software ■ J-Engine software

Refer to the BEA WebLogic Enterprise Release Notes for information about the distribution mechanism for the T-Engine, J-Engine, and Jolt licenses.

If you ordered the WebLogic Enterprise 5.1 56-bit or 128-bit Encryption Package software product, an additional, separate package contains the CD for this software. Installation of the optional Encryption Package software on Windows systems is explained in Chapter 12, “WebLogic Enterprise Encryption Package Installation on Windows Systems.” Installation of the optional Encryption Package software on UNIX systems is explained in Chapter 13, “WebLogic Enterprise Encryption Package Installation on UNIX Systems.”

Figure 1-1 shows the contents of the four CDs that come in the WebLogic Enterprise product box, plus the optional Encryption Package CDs that are separately orderable.

Figure 1-1 Distribution CDs for WebLogic Enterprise 5.1



Note: Using CD #1, you can also install WebLogic Enterprise T-Engine client components on Windows 98 or Windows 95 systems.

WebLogic Enterprise CDs #1 and #2 Software Components

The WebLogic Enterprise CDs #1 and #2 contain the following software components.

- The following WebLogic Enterprise server components:
  - CORBA C++
  - CORBA Java
  - J2EE
  - BEA Tuxedo 6.5 for WebLogic Enterprise 5.1
- The following WebLogic Enterprise client components:
  - CORBA C++ client Object Request Broker (ORB), including environmental objects
  - CORBA Java client Object Request Broker (ORB), including environmental objects
  - RMI/EJB client
  - ActiveX client for Windows systems, including the BEA Application Builder graphical user interface
  - BEA Tuxedo 6.5 client
- BEA Administration Console

For a list of the platforms supported for this release of the WebLogic Enterprise software, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

Notes: The installation procedure for the J-Engine software components on CD #3 is described in Part III, J-Engine Installation. The installation procedure for the BEA Jolt software components on CD #3 is described in Part V, BEA Jolt Installation. The optional BEA WebLogic Enterprise 56-bit or 128-bit Encryption Package software, which provides Secure Sockets Layer (SSL) and Link-Level Encryption (LLE) for WebLogic Enterprise applications, is

shipped to you only if you purchased this software. It is packaged and distributed on a separate CD. The installation procedure for this optional software is described in Part IV, Encryption Package Installation.

The WebLogic Enterprise 5.1 T-Engine installation procedure lets you select or deselect the T-Engine components that you want to install. You can also select or deselect specific subcomponents within the servers or clients categories.

At least one component or subcomponent must be selected for installation. Selecting a main component category causes all of its subcomponents to be selected. Deselecting a component causes all of its subcomponents to be deselected. Deselecting all subcomponents causes their parent component to be deselected.

The main component categories are:

- Servers
- Clients
- Administration Console

Within the Servers category, the options are:

- BEA Tuxedo Servers
- BEA CORBA C++ Servers
- BEA CORBA Java Servers
- BEA J2EE Servers

This feature allows you to install one or more server components on the target system.

Please note:

- The BEA Tuxedo server software is always installed as a base component for any of the other WebLogic Enterprise servers.
- The CORBA Java and J2EE server components are always installed together, even if you only select one of those items.
- When you install an individual type of server software, its corresponding client software is also installed. For example, if you install the J2EE Servers software, the RMI/EJB client software is also installed automatically. Therefore, if you have installed a type of server software, you do not need to perform a separate installation for the client software for that server.

If you select the Clients component, you can indicate which types of clients you want to install. The Client options are:

- BEA Tuxedo Client
- BEA CORBA C++ Client
- BEA CORBA Java Client
- BEA RMI/EJB Client
- BEA ActiveX Client (Windows systems only)

The Administration category consists of the Administration Console and does not have any subcomponents. For information about how to start this console after it is installed, refer to Chapter 5, "BEA Administration Console Startup." For information about how to use this console, refer to the online help that is accessible through the Console's Help button.

Hardware and Software Prerequisites for the WebLogic Enterprise Software

The WebLogic Enterprise software must be installed on each machine that will run a WebLogic Enterprise client or server application.

Note: Do not share the WebLogic Enterprise executables across remote file systems.

The BEA Administration Console must be installed in a file system that supports long filenames (that is, those containing more than 14 characters).

Before you can install the optional WebLogic Enterprise Encryption Package 5.1 software, you must first install at least one WebLogic Enterprise 5.1 server component, or at least one of the following WebLogic Enterprise 5.1 client component options:

- All WebLogic Enterprise client components (recommended)
- BEA C++ client
- BEA Tuxedo client

If you are installing the WebLogic Enterprise 5.1 Encryption Package software on a Microsoft Windows 98 or Windows 95 client system, you must first install at least one of the WebLogic Enterprise 5.1 client components shown in the previous list. Installation of the optional Encryption Package software on Windows systems is explained in Chapter 12, "WebLogic Enterprise Encryption Package Installation on Windows Systems." Installation of the optional Encryption Package software on UNIX systems is explained in Chapter 13, "WebLogic Enterprise Encryption Package Installation on UNIX Systems."

For details about the hardware and software prerequisites for all platforms on which the WebLogic Enterprise software is supported, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets." Check the data sheet for each platform on which you plan to install the WebLogic Enterprise software.

For UNIX Systems

You need the following information and resources before installing the WebLogic Enterprise software on a UNIX system:

- A system that meets the hardware and software requirements described in Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."
- The superuser password so that you can mount the CD as a file system.
- The name of a file system with enough free space for the WebLogic Enterprise software packages you want to install. For disk space requirements, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

For Windows Systems

You need the following resources before installing the WebLogic Enterprise software on a Microsoft Windows system:

- Administrative privileges.
- A system that meets the hardware and software requirements described in Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

- Enough disk space for the packages you want to install. For disk space requirements, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

Note: Microsoft Windows 98 and 95 systems support only the WebLogic Enterprise Client software. Microsoft Windows 98 and 95 systems do not support the full WebLogic Enterprise system software (server and client) or the BEA Administration Console software.

Overview of Upgrade Considerations

If you are installing the WebLogic Enterprise 5.1 software on a Microsoft Windows 2000, NT, 98, or 95 system that contains a previous version of WebLogic Enterprise, M3, or BEA Tuxedo software, there are important upgrade considerations. In general, BEA recommends that you use the Windows Add/Remove (uninstall) program to remove the previous WebLogic Enterprise, M3, or BEA Tuxedo software on the target system, before you install WebLogic Enterprise 5.1. These considerations are discussed in Chapter 2, "WebLogic Enterprise T-Engine Installation on Windows Systems."

Managing Files and Databases

This section explains how to assign ownership of the WebLogic Enterprise system files to the system administrator, and how to set up your disk to accommodate those files.

Assigning File Ownership on UNIX Systems

If you are installing the WebLogic Enterprise software on a UNIX system, BEA recommends that you create a separate user account for the WebLogic Enterprise system administrator and give ownership of the WebLogic Enterprise system files to that account.

Allocating Disk Space

A running WebLogic Enterprise client or server application needs disk space for system files and for the application's database(s). You do not use this space until you begin to develop or run your WebLogic Enterprise client or server application, but it is important to plan for this space before installing the software. To help explain what is involved, the following sections describe how the WebLogic Enterprise system handles files.

For more information about the commands discussed in this section, see the following documents:

- The *Administration* topics in the WebLogic Enterprise online documentation
- The *BEA Tuxedo Reference Manual*, which is included in the WebLogic Enterprise online documentation

The WebLogic Enterprise System Disk Management Interface

The WebLogic Enterprise system has a facility, the Disk Management Interface (DMI), that manages logical files within a single disk device or set of devices. Among other things, the DMI stores binary configuration tables and the transaction log.

The WebLogic Enterprise disk management software supports the notion of a WebLogic Enterprise file system that is distinct from any operating system file system. (For the remainder of this discussion, the term OS file system is used to refer to any operating system file system.)

Administrative access to the DMI to create, initialize, or destroy entries in the WebLogic Enterprise file system is through `tmadmin` administrative commands.

There are two ways to physically store the logical files managed by the DMI:

- Physical storage can be on an OS file system.
- Disk space outside the control of all OS file systems can be set aside for the WebLogic Enterprise system.

Files reside on special device files in that disk space, and the DMI manages the files directly. Space outside the OS file system is usually referred to as raw disk space. Not only is I/O faster when done by system calls reading directly from and writing directly to device special files on raw disks, raw disk space is preferred when it is important to know for certain that a physical `write()` has been done.

With the OS file system, the precise moment at which a `write()` is done cannot be relied upon. In the WebLogic Enterprise system, accurate control of the write operation is particularly important for entries in the transaction log. With multiple users, control of the write operation is also an important element in assuring database consistency.

Arranging for Raw Disk Space

If you decide to use raw disk space for your WebLogic Enterprise client or server application, you may find that the hard disk devices on your machine are fully allocated to file systems such as `/(root)`, `/usr`, and other UNIX file systems. If that is the case, it is necessary to repartition your hard disk device to set aside some partitions that are not to be used for an OS file system. Information about how to do this can be found in the system administration documentation for your particular platform.

Notes: Repartitioning disks can render the machine unusable and should be attempted only by experienced UNIX system administrators.

On Microsoft Windows NT platforms, the default behavior is unbuffered I/O; no special arrangements are needed.

How the WebLogic Enterprise File System Is Organized

A WebLogic Enterprise file system has a Volume Table of Contents (VTOC) that lists files on a set of devices named in the Universal Device List (UDL). The UDL contains information about the location of the physical storage space for the WebLogic Enterprise tables.

In a WebLogic Enterprise system, all the system files might be stored together on the same raw disk slice or OS file system file. While it is possible to use regular OS file system files for the configuration tables, it is strongly recommended that the transaction log (`TLOG`) be stored on a raw disk device.

Because the `TLOG` seldom needs to be larger than 100 blocks and because disk partitions are always substantially larger than 100 blocks, it may make sense to use the same device for everything. The pathname of the device needs to be contained in both the `TUXCONFIG` and the `FSCONFIG` environment variables.

Listing 1-1 shows approximately how the content might appear.

Listing 1-1 VTOC and UDL Output

```
Output based on setting FSCONFIG=$TUXCONFIG, and invoking tmadmin:

No bulletin board exists. Entering boot mode.

> livtoc
Volume Table of Contents on /usr2/bank/tuxconfig:
0: VTOC: Device 0 Offset 0 Pages 7
1: UDL: Device 0 Offset 7 Pages 28
2: _RESOURCE_SECT: Device 0 Offset 35 Pages 3
3: _MACHINES_SECT: Device 0 Offset 38 Pages 40
4: _GROUPS_SECT: Device 0 Offset 78 Pages 40
5: _SERVERS_SECT: Device 0 Offset 118 Pages 40
6: _SERVICES_SECT: Device 0 Offset 158 Pages 20
7: _ROUTING_SECT: Device 0 Offset 178 Pages 100
8: _NETWORK_SECT: Device 0 Offset 278 Pages 20
9: _MIBPERMS_SECT: Device 0 Offset 298 Pages 2

# If the TLOG is stored on the same device, there will be an
# entry something like:

9: TLOG1: Device 0 Offset 236 Pages 100
> q
```

The WebLogic Enterprise system administrator must ensure that raw disk slices are available, as needed, on each machine participating in a WebLogic Enterprise domain. The size of entities in the WebLogic Enterprise file system are shown in Table 1-1.

Table 1-1 Size of System Tables

Entity	512-byte Pages
VTOC	1
TUXCONFIG	270
TLOG	100 (default)
UDL	28
TOTAL	399

The size of the `TUXCONFIG` file is larger if there are more entries in the configuration file (`UBBCONFIG`). The administrator is encouraged to allocate additional space for dynamic reconfiguration and for growth of the application. The default size assumed by the `crdl` subcommand of `tmadmin` is 1000 blocks, which should be adequate for the initial installation.

Space for Queue Spaces (If You Are Using /Q)

If your WebLogic Enterprise application is using the BEA Tuxedo system/Q for store-and-forward queue management, your queue space can be listed in the same UDL and can be managed by the WebLogic Enterprise VTOC.

Space for Application Servers

As you are calculating the space requirements for the WebLogic Enterprise system, also consider the requirements of the server machines that perform the work of the server application. These requirements are specified by the application, and they are in addition to the requirements for the WebLogic Enterprise system itself (unless otherwise specified).

Space for Stateful Session Bean Storage

When you calculate the space requirements for the WebLogic Enterprise system, also consider the requirements for saving the state of EJB Stateful Session Beans. These requirements are specified by the application, and they are in addition to the requirements for the WebLogic Enterprise system itself.

Selecting Directories for the WebLogic Enterprise Files

During the installation process, you are prompted to make decisions about where, in your file system, a number of your WebLogic Enterprise directories and files are installed. To help you plan for this part of the process, this section describes the directories and files about which you are prompted to make a decision, as follows:

- "For All Platforms" should be read by anyone installing the WebLogic Enterprise software.
- "For All Server Platforms Supporting the BEA Administration Console" should be read by anyone installing the BEA Administration Console for WebLogic Enterprise administration.

For All Platforms

You are prompted for a pathname for the base directory of your WebLogic Enterprise software. This directory must meet the following requirements:

- The directory must be dedicated to the WebLogic Enterprise software. It must not contain files for any other applications.
- The directory must have read, write, and search (execute) permissions for the WebLogic Enterprise administrator.

In the WebLogic Enterprise documentation, this directory is referred to as `$TUXDIR` (UNIX systems) or `%TUXDIR%` (Windows NT systems), except in cases where a sample path is shown, such as `c:\wledir`.

For All Server Platforms Supporting the BEA Administration Console

If you are installing the WebLogic Enterprise Administration software, you are prompted to accept or replace the default pathnames and filenames used for the BEA Administration Console components. These default pathnames and filenames are based on the value of `%TUXDIR%` (Windows NT systems) or `$TUXDIR` (UNIX systems) that you specify.

If you are running a commercial Web server, you may find the default settings inappropriate, especially if your server is handling requests from both the BEA Administration Console and other Web programs on the same port. To accommodate this situation, the WebLogic Enterprise software enables you to choose between accepting the defaults and assigning your own pathnames and filenames. The remainder of this section describes the choices you are given, as follows:

1. A pathname for the HTML files—by default, the following HTML files are installed in the directory `%TUXDIR%\udataobj\webgui` (Windows NT systems), and `$TUXDIR/udataobj/webgui` (UNIX systems). You are prompted to supply your own paths for these files if you prefer to have them installed elsewhere.

   - An HTML template file (`webgui.html`) that is used by `tuxadm` as the basis for many screens displayed during a BEA Administration Console session.
   - An HTML file (`webguitop.html`) that displays legal notices and warnings when the BEA Administration Console is first displayed on the screen.
   - The HTML files that make up the BEA Administration Console documentation. These HTML files are installed in `%TUXDIR%\help` (Windows NT systems) and in `$TUXDIR/help` (UNIX systems).

   Exception: If you are installing the WebLogic Enterprise software on a Microsoft Windows NT platform and the installation program detects an existing Web server, a default directory appropriate for that Web server is used, instead.

2. A pathname for the Java and image files—by default, the class files for the Java applet are installed in one of the following directories. You are prompted to supply your own paths for these files if you prefer to have them installed elsewhere.

   - `%TUXDIR%\udataobj\webgui\java` (Windows 2000 or NT systems) and `$TUXDIR/udataobj/webgui/java` (UNIX systems)
   - A subdirectory called `java` in the HTML directory you specified after the prompt described in step 1

3. A directory pathname for the CGI program (`tuxadm`)—specify one of the following (unless the following exception applies):

   - `%TUXDIR%\udataobj\webgui\cgi-bin` (Windows 2000 OR NT systems) `$TUXDIR/udataobj/webgui/cgi-bin` (UNIX systems)
   - A subdirectory called `cgi-bin` in the HTML directory you specified after the prompt described in step 1

   Exception: If the installation program detects the Microsoft Internet Information Server (IIS) in a standard directory, `tuxadm` is installed in a subdirectory called `scripts` in the directory you specified in step 1 as the pathname for the HTML files.

   Note: Do not specify `$TUXDIR/bin` (UNIX systems) or `%TUXDIR%\bin` (Windows 2000 or NT systems) as your CGI directory. If you do, you risk having other WebLogic Enterprise client or server applications executed accidentally by an uninformed user of the BEA Administration Console. You may also introduce a security risk.

4. An alias for the directory pathname for `tuxadm`. This is the path for the directory in which Web clients expect to find `tuxadm`. The default is either `/cgi-bin` or `/scripts` (for UNIX systems) or `\cgi-bin` or `\scripts` (for Windows 2000 or NT systems).

Selecting an Administrative Password

The WebLogic Enterprise system uses an administrative password to protect the machine on which it is installed from unauthorized administrative requests and operations (such as `tmboot`). Whenever administrative communications arrive on this machine through the `tlisten` and `wlisten` processes, the WebLogic Enterprise system authenticates the communications by means of the password.

You assign an administrative password during the installation process (to the machine on which the WebLogic Enterprise software is being installed) by entering the password of your choice after the appropriate prompt. The password must be a string of alphanumeric characters in clear-text format. It may contain no more than 80 characters.

A common password is required for two machines in a WebLogic Enterprise domain to communicate successfully. For this reason, you must use the same password whenever you install the WebLogic Enterprise software on multiple machines for a single domain. As described previously, you are prompted to provide the password during the WebLogic Enterprise installation process. If, however, you use a different password for one machine, you must add that password to the `tlisten.pw` file on each existing machine with which you want that machine to communicate.

For these reasons, you may have more than one administrative password in your `tlisten.pw` file. A single password file may contain no more than 20 passwords, with one password per line.

The administrative password that you enter during installation is collected by the installation script and is stored in:

`$TUXDIR/udataobj/tlisten.pw` (UNIX systems)
`%TUXDIR%\udataobj\tlisten.pw` (Windows 2000 or NT systems)

Make sure the permissions on your `tlisten.pw` file are set such that only the WebLogic Enterprise system administrator can read the file.

Configuring the WebLogic Enterprise System for Windows 2000 or NT

You cannot configure your WebLogic Enterprise system for Microsoft Windows 2000 or NT until after you install the WebLogic Enterprise software and license. After you complete the installation as described in Chapter 2, "WebLogic Enterprise T-Engine Installation on Windows Systems," refer to the section "Configuring the WebLogic Enterprise System for Microsoft Windows 2000 and NT 4.0" on page 4-2 for instructions on configuring the WebLogic Enterprise system for Windows 2000 or NT.

Configuring the UNIX Operating System for the WebLogic Enterprise Software

The WebLogic Enterprise software uses the UNIX operating system Interprocess Communications (IPC) resources.

IPC resources are configured by three sets of tuning parameters that control the amount of shared memory (prefix SHM), number of semaphores (prefix SEM), and size of message queues and messages (prefix MSG).

The settings for these parameters are WebLogic Enterprise system dependent. Most UNIX systems, however, are shipped with default values that are too low for WebLogic Enterprise systems.

The following sections describe the IPC parameters and provide guidelines for configuring them. Because these parameters vary across different versions of UNIX, the following descriptions are generic. For the exact parameter names, default settings, settings used for the University Sample applications for each platform, and information about how to change the parameters, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

If you change a parameter, you need to rebuild the kernel and reboot the operating system using the standard administrative tools. Consult your operating system administrator or the system administrator's guide for your platform for details.

If your WebLogic Enterprise client or server application is distributed, the minimum IPC resources must be available on every UNIX platform participating in the application.

Semaphores

Every process that participates in a WebLogic Enterprise system requires a semaphore. When the system boots, the number of semaphores configured in the operating system is checked, and the boot fails if the configured number is not high enough.

Semaphores on UNIX systems are grouped in semaphore sets. Each semaphore in a set can be accessed separately. Although WebLogic Enterprise does not perform operations on semaphore sets, it attempts to allocate as many semaphores per semaphore set as possible. WebLogic Enterprise also needs `undo` structures to function properly. The operating system uses `undo` structures to unlock semaphores held by a process that dies unexpectedly.

The following semaphore parameters may need to be adjusted:

SEMMNS
: Maximum number of semaphores in the system. The minimum requirement for `SEMMNS` is:
`MAXACCESSERS - MAXWSCLIENTS + 13`
where `MAXACCESSERS` is the maximum number of WebLogic Enterprise processes on a particular machine (including servers and native clients), and `MAXWSCLIENTS` is the maximum number of WebLogic Enterprise remote clients. Both of these parameters are specified in the application's `UBBCONFIG` file.

  For more information about `UBBCONFIG`, see Creating a Configuration File in the WebLogic Enterprise online documentation, or the `ubbconfig`(5) reference page in the *BEA Tuxedo Reference Manual*.

SEMMNI
: Maximum number of active semaphore sets. See SEMMSL.

SEMMSL
: Maximum number of semaphores per semaphore set. SEMMNI and SEMMSL are commonly chosen so that their product equals SEMMNS. The WebLogic Enterprise system does not perform semaphore operations on semaphore sets; however, it attempts to allocate as many semaphores per semaphore set as possible.

SEMMAP
: Size of the control map used to manage semaphore sets. SEMMAP should be equal to SEMMNI.

SEMMNU
: Number of undo structures in the system. Because an undo structure is needed for each process that can access the Bulletin Board, SEMMNU must be at least as large as SEMMNS.

SEMUME
: Maximum number of undo entries per undo structure. The value 1 suffices.

Message Queues and Messages

WebLogic Enterprise client and server applications use UNIX messages and message queues for client/server communication. Examples of such messages are service requests, service replies, conversational messages, unsolicited notification messages, administrative messages, and transaction control messages.

Every Multiple Servers, Single Queue (MSSQ) set of servers, and every individual server has a message queue for receiving requests. Every client has its own queue for receiving replies. Servers that specify the REPLYQ parameter also get individual reply queues.

The adjustment of kernel message parameters is important to the proper tuning of the WebLogic Enterprise system. Inappropriate values can lead to an inability to boot, or to severe performance degradation.

There are various message queue parameters. They limit various characteristics of the queue space, including the total number of outstanding messages (MSGTQL), the total number of bytes that can be on one queue (MSGMNB), the size limit of an individual message (MSGMAX), the total number of message segments that can be outstanding at one time (MSGSEG), and the size of each segment (MSGSSZ).

Exceeding any of the parameter limits described previously results in what is known as a blocking condition. There is a special case for `MSGMAX`. Messages that exceed 75 percent of `MSGMNB`, or that are larger than `MSGMAX`, are placed in a UNIX file. A very small message with the filename in it is then sent to the recipient. Avoid this mode of operation, because it results in a severe reduction in performance.

An application deadlock can result if every process is blocked when it tries to send a message. For example, when client applications fill the message space with requests, and server applications are all blocked when they try to send replies, because no server application can read a message, there is a deadlock. Timeouts can sometimes break the deadlock, but no useful work will have been done.

Especially troublesome is a client application that sends its requests with the `TPNOREPLY` flag. This practice can fill either individual queues or the system message space, depending on the size of the messages. Such applications may have to implement their own flow control to limit the number of outstanding messages.

To summarize, if client applications or server applications are blocking on their send operations (that is, requesting services or sending replies), there is potential for trouble. It is usually no problem, though, for a single server request queue to always be full, as long as there is space in the system for more messages on other queues.

There are performance implications to queue blocking conditions, both on the sending side and the receiving side. The UNIX operating system, when waking up blocked processes, wakes up all the processes blocked on a particular event, even if only one can proceed. The other processes go back to sleep. This process scheduling overhead can be expensive.

For example, on an empty server request queue where there is more than one server application (that is, MSSQ), an arriving message wakes up all the idle, or blocked, server applications on that queue. In the case of a full server request queue, as each request is read by a server application, the system wakes up all the blocked clients. Depending on the size of the messages, zero or more clients are allowed to place their messages on the queue. The remainder of the clients have to go back to sleep. Because there may be hundreds of clients in the system, the mass wakeup of all of these clients every time a service request is processed can severely degrade performance.

A properly tuned system rarely fills its queues. Enough slack should be left in the queues to handle the natural variability of the message flow. No exact settings can be recommended. Tuning is very system dependent. The UNIX `ipcs`(1) command provides a snapshot of the queues so you can tell whether they are full. You can try the

TPNOBLOCK flag when sending requests. That way, clients can tell when queues are full, and they can slow down a bit. It might help to increase the scheduling priority of the servers whose request queues are full.

The following message parameters may need to be adjusted:

MSGMNI
: Number of unique message queue identifiers. Each process participating in a WebLogic Enterprise client or server application on a particular machine typically needs at least one message queue. This number is reduced if MSSQ sets are used, where multiple server processes share a single queue. For transaction processing, count an additional queue per server group for TMS processes. Thus, the minimum requirement for MSGMNI can be determined by this formula:

```
MSGMNI = MAXACCESSERS + 7
+ (number of servers with REPLYQ)
+ (number of MSSQ sets)
- (number of servers in MSSQ sets)
```

MSGMAX
: Maximum message size in bytes. MSGMAX must be large enough to handle any WebLogic Enterprise client or server application running on this machine.

MSGMNB
: Maximum message queue length in bytes. This number must accommodate the total size of all messages that are on a queue and that have not been taken off by the associated process(es). The minimum value for MSGMNB is MSGMAX. Messages longer than 75 percent of MSGMNB are sent to a file instead of to a message queue. Avoid this situation because it severely degrades performance.

MSGMAP
: Number of entries in the control map used to manage message segments. MSGMAP should be the same as the number of message segments (MSGSEG), which should be twice the size of MSGMNI.

MSGSSZ
: Size of a message segment in bytes. A message can consist of several such segments. The value of MSGSSZ should be such that a multiple of MSGSSZ is equal to the size (including the WebLogic Enterprise system header) of the most commonly sent message. This practice avoids wasting space.

MSGSEG
: Number of message segments in the system.

MSGTQL
: Total number of outstanding messages that can be stored by the kernel. This is the maximum number of unread messages at any given time.

Shared Memory

In the WebLogic Enterprise environment, shared memory is used for the Bulletin Board and for the control table of the IIOP Listener. An application also may choose to use shared memory for its own purposes.

The following shared memory parameters may need to be adjusted:

SHMMAX
: Maximum shared memory segment size in bytes. This number represents the largest shared memory segment that can be allocated. A process can, however, attach to more than one segment of size `SHMMAX`.

SHMSEG
: Maximum number of shared memory segments per process. For a given configuration, the maximum amount of shared memory in bytes to which a process can attach is `SHMMAX * SHMSEG`. A value between 6 and 15 should be adequate.

SHMMNI
: Maximum number of shared memory identifiers in the system. The WebLogic Enterprise system requires one identifier per Bulletin Board and an additional identifier if the IIOP Listener is running.

SHMMIN
: Minimum shared memory segment size in bytes. This should always be set to 1.

Other Kernel Tuning Parameters

Experience with WebLogic Enterprise systems has shown that some other UNIX tuning parameters may need to be set to higher values. The settings are dependent on the application and do not apply to all applications.

ULIMIT
: Maximum file size. `ULIMIT` needs to be large enough so that you can install the WebLogic Enterprise software and build servers. We recommend 4 MB.

NOFILES
: Maximum number of open files per process. A WebLogic Enterprise server application requires a minimum of four file descriptors.

MAXUP
: Maximum number of processes per non-super user. The WebLogic Enterprise system processes (servers and administrative processes) run with the `UID` specified in the application's `UBBCONFIG` file. `MAXUP` needs to be large enough to allow all these processes to run.

NPROC
: Maximum number of processes (system wide).

NREGION
: Number of region table entries to allocate. Most processes have three regions: text, data, and stack. Additional regions are needed for each shared memory segment and shared library (text and data) attached. However, the region table entry for the text of a shared text program is shared by all processes executing that program. Each shared memory segment attached to one or more processes uses another region table entry.

NUMTIM
: Maximum number of STREAMS modules that can be pushed by the Transport Layer Interface (TLI). A typical default value is 16. Set `NUMTIM` to at least 256.

NUMTRW
: The number of TLI read/write structures to allocate in kernel data space. A typical default value is 16. Set `NUMTRW` to at least 256.

Calculating IPC Requirements

When the WebLogic Enterprise software has been installed and an application configuration file (`UBBCONFIG` file) is available, the `tmloadcf` command can be used to calculate the IPC resources needed to support the application. For more information, see the `tmloadcf`(1) reference page in the *BEA Tuxedo Reference Manual*. Also see "Verifying IPC Requirements" on page 4-17.

Part II T-Engine Installation

2 WebLogic Enterprise T-Engine Installation on Windows Systems

This chapter explains how to install the WebLogic Enterprise 5.1 T-Engine software on Microsoft Windows 2000, NT 4.0, 98, and 95 systems.

This topic includes the following sections:

- Platforms Supported
- If You Are Upgrading from a Previous Release
- Installing the WebLogic Enterprise Software on Microsoft Windows 2000 or NT 4.0 Systems
- Installing the WebLogic Enterprise Software on Microsoft Windows 98 and 95 Systems
- Removing (Uninstalling) the WebLogic Enterprise Software from Your System

Note: Part of the installation procedure described in this chapter includes running a sample application to verify that the installation is successful. If you are installing either the CORBA Java or J2EE software, and you want to run this sample application, you need to have the Java 2 SDK version 1.2.2 software installed on your system.

Platforms Supported

The Microsoft Windows platforms listed in Table 2-1 are supported.

Table 2-1 Supported Microsoft Platforms

Operating System	Release/Version
Microsoft Windows 2000	
Microsoft Windows NT	4.0 Service Pack 5 (SP5) on Intel
Microsoft Windows 98	
Microsoft Windows 95	Service Pack 1

You can install all or selected WebLogic Enterprise server, client, and administration components on a Microsoft Windows 2000 or NT 4.0 SP5 (Intel) operating system. You can install only the WebLogic Enterprise client components on the Microsoft Windows 98 and 98 operating systems. Windows 98 and 95 systems cannot be used as WebLogic Enterprise server systems.

For the hardware and software requirements for these operating systems, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

If You Are Upgrading from a Previous Release

If you are installing the WebLogic Enterprise 5.1 software on a Windows 2000, NT, Windows 98, or Windows 95 system that contains a previous version of WebLogic Enterprise, M3, or BEA Tuxedo software, there are important upgrade considerations.

BEA recommends that you use the Windows Add/Remove (uninstall) program to remove a previous version of WebLogic Enterprise, M3, or BEA Tuxedo software on the target system, before you install WebLogic Enterprise 5.1. During the WebLogic

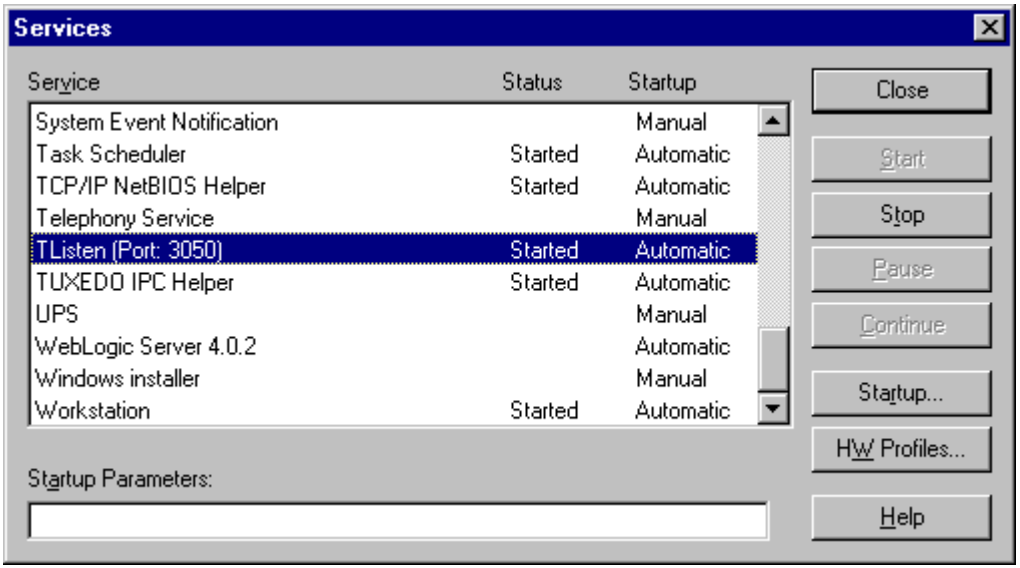
Enterprise 5.1 installation, the procedure will try to detect earlier versions of WebLogic Enterprise, M3, or BEA Tuxedo; if present, the procedure will recommend that you cancel the installation, exit Setup, and use the Windows Add/Remove program.

Note: BEA strongly recommends that you not run more than one version of WebLogic Enterprise, M3, or BEA Tuxedo software on the same system. Unexpected problems can occur.

Starting with a Clean System

To ensure that you are starting with a clean system, before you install WebLogic Enterprise 5.1, follow these steps:

1. Use the `tmshutdown` command to stop any running WebLogic Enterprise, M3, or BEA Tuxedo applications. This command is described in the *Administration* topics in the WebLogic Enterprise online documentation.
2. If necessary, stop the `TListen` and `Tuxedo IPC Helper` services. From the Start menu, click Start—>Settings—>Control Panel—>Services. A screen similar to the following is displayed.

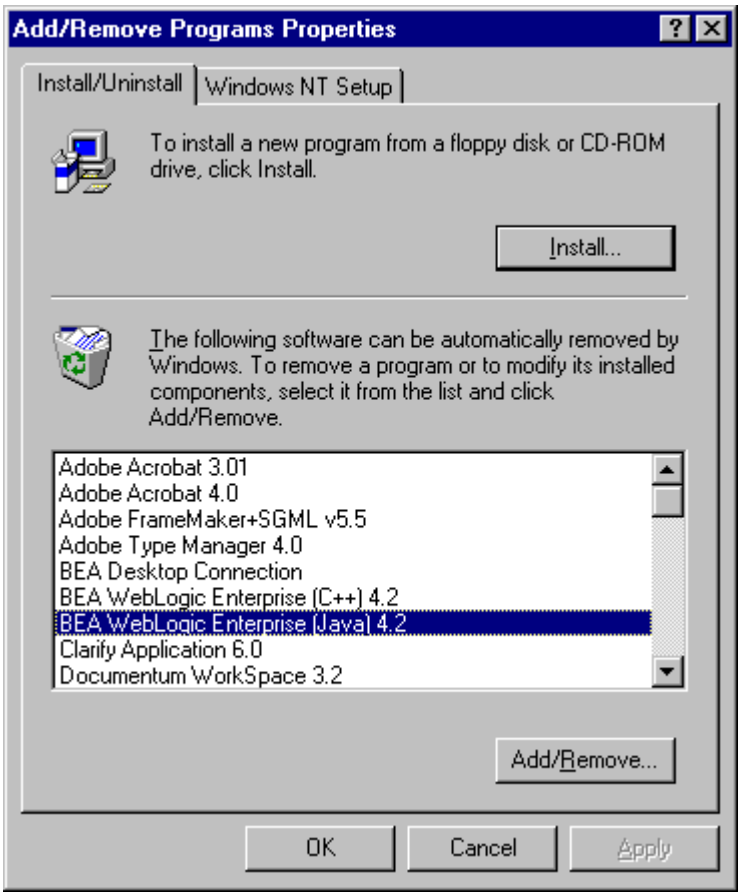


3. Scroll to the entry for the `TListen` service, select it, and then click the Stop button. The Status value should change from Started to a blank entry. Then scroll to the `Tuxedo IPC Helper` service, select it, and click the Stop button. In some cases, you may see an error; however, the service's Status value should change from Started to a blank entry. Click the Close button.

4. Move to a temporary location any files that you or your coworkers added to the `%TUXDIR%` directory, where `TUXDIR` is the directory in which the prior WebLogic Enterprise, M3, or BEA Tuxedo software resides. This step is necessary because the Windows Add/Remove uninstall program only knows about the original set of files that were installed by BEA. If additional files are present, older directories may continue to exist after you run the uninstall program.

5. Back up any existing WebLogic Enterprise, M3, or BEA Tuxedo files that you customized for your environment. For example, you should back up the Resource Manager (RM) file in `%TUXDIR%\udataobj\Rm`. The `Rm` file contains database vendor-specific settings that are used by commands such as `buildtms` and `buildXAJS`. You may also need to back up the BEA Administration Console `webgui.ini` initialization file to a temporary location. This file is located in `%TUXDIR%\udataobj\webgui`, where `TUXDIR` is the directory in which you installed the prior version of WebLogic Enterprise, M3, or BEA Tuxedo.

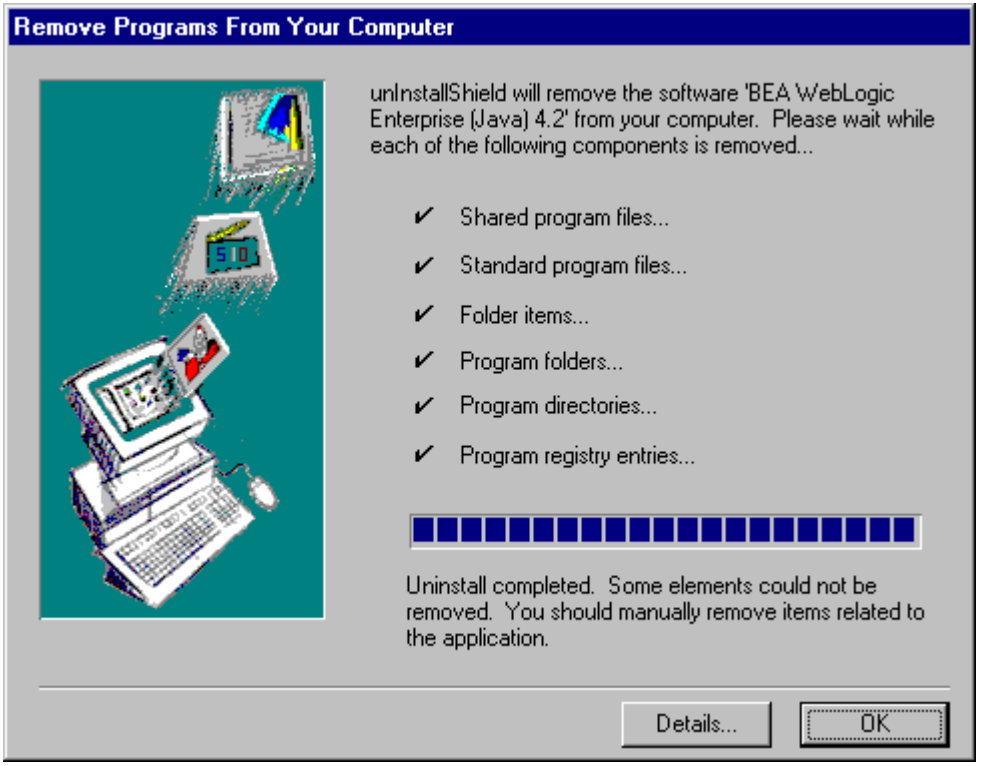
6. Run the Windows Add/Remove program to remove the prior WebLogic Enterprise, M3, or BEA Tuxedo software version. From the Start menu, click Start—>Settings—>Control Panel—>Add/Remove Programs. A screen similar to the following is displayed:



7. Scroll to the entry for the prior WebLogic Enterprise, M3, or BEA Tuxedo software, select it, and click the Add/Remove button.

   Note: If you have both the C++ and Java components of WebLogic Enterprise 4.2 installed on your machine, you must remove the Java software *before* removing the C++ software.

8. In response to the prompt, confirm that you want to uninstall the software. After the program finishes, it displays a screen similar to the following:



9. If the uninstall program was not able to remove all directories (usually because the files were added after the original installation), you can click the Details button to find out which directories remain on your system. If the files in the directories contain changes that you made, such as a modified sample file, move it to a temporary location.

10. If the prior version of WebLogic Enterprise was 4.2 or 4.1, you may need to uninstall the WebLogic Enterprise Java and WebLogic Enterprise C++ software as separate steps. **Remember:** if you have both the C++ and Java components of WebLogic Enterprise 4.2 installed on your machine, you must remove the Java software *before* removing the C++ software, as shown in Step 7.

11. Reboot your system after the uninstall completes.

12. Install the WebLogic Enterprise 5.1 software, as described in this chapter. When the WebLogic Enterprise 5.1 software installation finishes, compare the files from a previous release that you moved to a temporary location (such as your RM file described in a previous step) with the installed version. If appropriate, customize the installed file so that it contains the data that is appropriate for your environment.

Installing the WebLogic Enterprise Software on Microsoft Windows 2000 or NT 4.0 Systems

This section describes how to install the WebLogic Enterprise software on Microsoft Windows 2000 or NT 4.0 systems.

Preinstallation Considerations

This section describes some important tasks that you should perform before starting the WebLogic Enterprise installation.

Backing Up Files

If you are installing WebLogic Enterprise software on a system that already has M3 or WebLogic Enterprise software installed, there are some files that you may want to back up prior to the installation, and then restore them after the installation is complete. This is because some files that you may have modified for your M3 or WebLogic Enterprise software are overwritten when the WebLogic Enterprise software is installed.

To avoid having to modify these files again, proceed as follows:

1. If you are installing one or more of the WebLogic Enterprise server software components, back up the `RM` file to a temporary location. This file is located in the `%TUXDIR%\udataobj` or `$TUXDIR/udataobj` directory, where `TUXDIR` is the directory in which you installed the M3 or WebLogic Enterprise software.
2. If you are installing the BEA Administration Console, back up the `webgui.ini` file to a temporary location. This file is located in the `%TUXDIR%\udataobj\webgui` or `$TUXDIR/udataobj/webgui` directory.
3. After the installation is complete, restore these files to their original locations.

Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services

Before beginning the installation, make sure no BEA Tuxedo or WebLogic Enterprise client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the Administration section of the WebLogic Enterprise online documentation.

Checking That Your Account Has Administrator Privilege

You need administrator privileges to perform the installation. If you attempt to install the WebLogic Enterprise software without administrator privileges, the following error message will be displayed:

```
Cannot Install Tuxedo IPC Helper Service.
```

Microsoft Windows 2000 or NT 4.0 Installation Procedure

It will take approximately 10 minutes to install the software.

Warning: If you are **re-installing the WebLogic Enterprise 5.1 software** on your system, and you also already installed the optional WebLogic Enterprise 5.1 Encryption Package software (56-bit or 128-bit) on your system, you must:

a. First, uninstall the WebLogic Enterprise Encryption Package software. (See the section “Removing (Uninstalling) the WebLogic Enterprise Encryption Package from Your System” on page 12-14.)

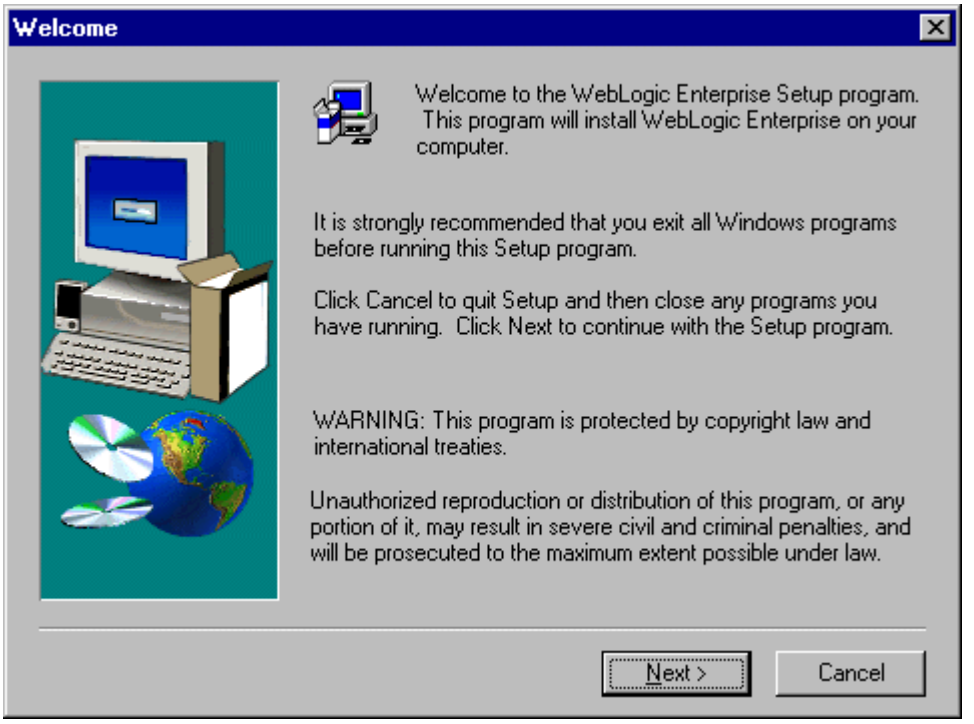
b. Next, uninstall the WebLogic Enterprise 5.1 software. (See the section "Removing (Uninstalling) the WebLogic Enterprise Software from Your System" on page 2-43.)

c. Re-install the WebLogic Enterprise 5.1 software, as explained in this section.

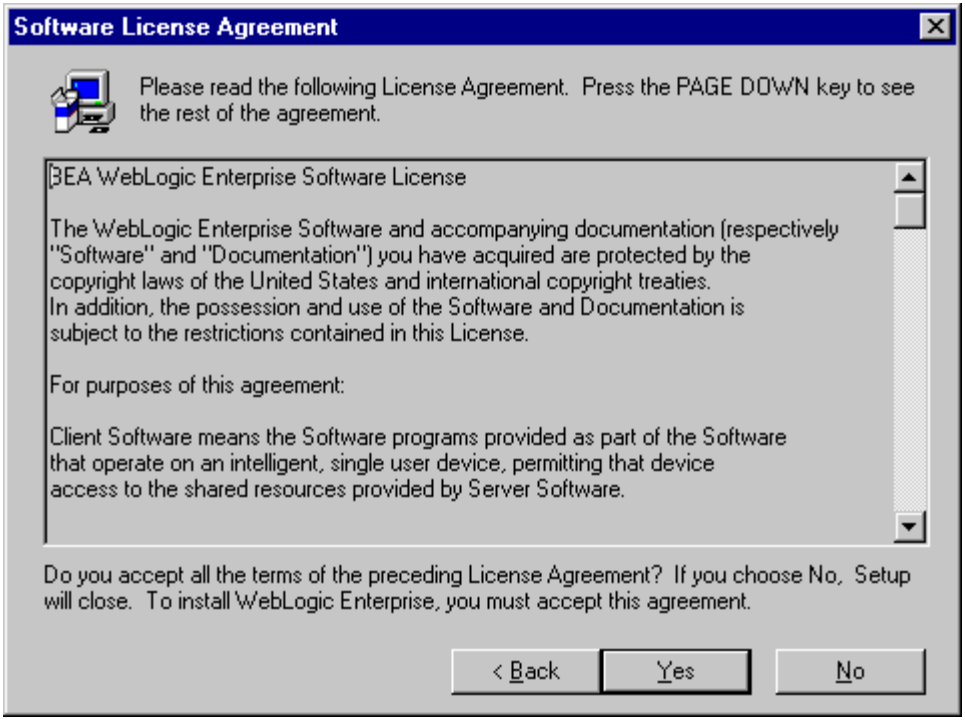
To install the WebLogic Enterprise software on a Microsoft Windows 2000 or NT 4.0 operating system, complete the following steps:

1. Insert the BEA WebLogic Enterprise software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)

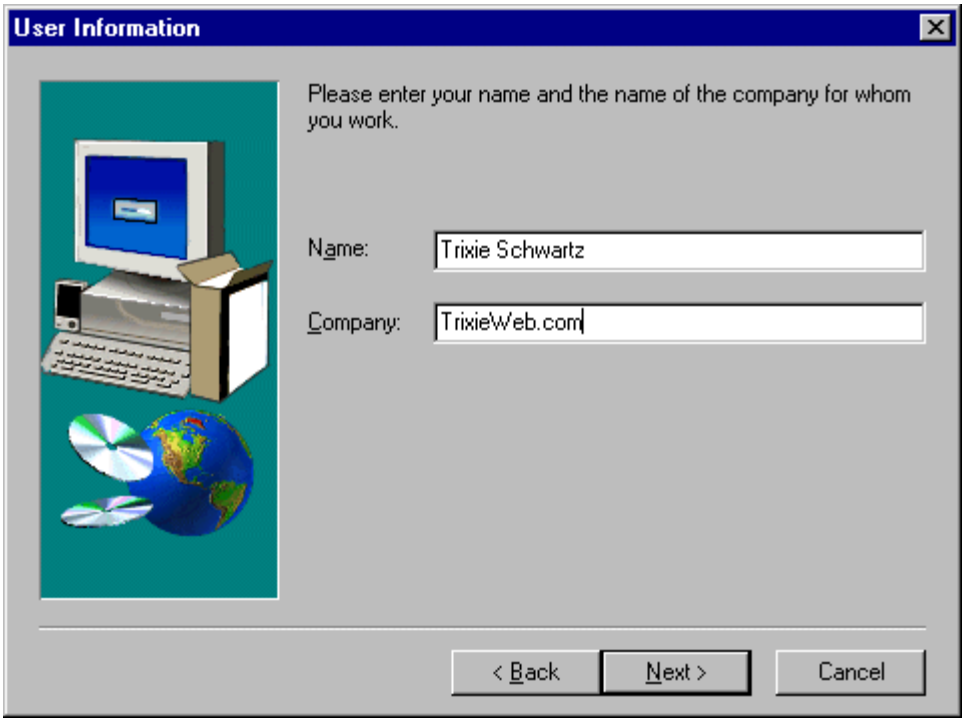
2. The Setup screen is displayed, followed by the Welcome screen.



3. Click Next. The Software License Agreement screen is displayed.

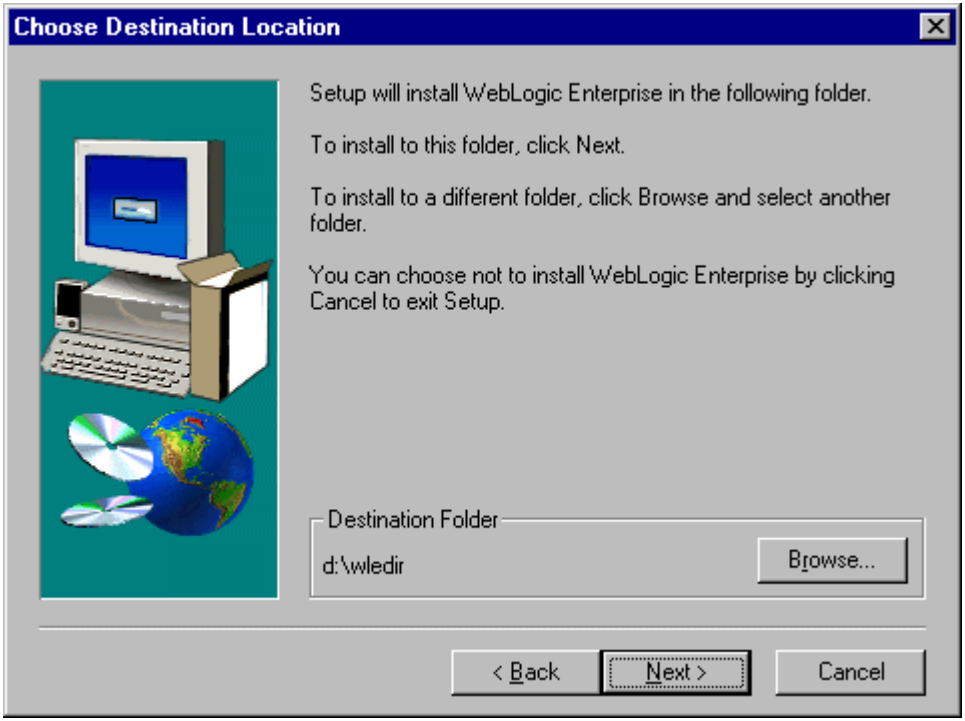


4. To accept the license agreement, click Yes. The User Information screen is displayed.



5. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.

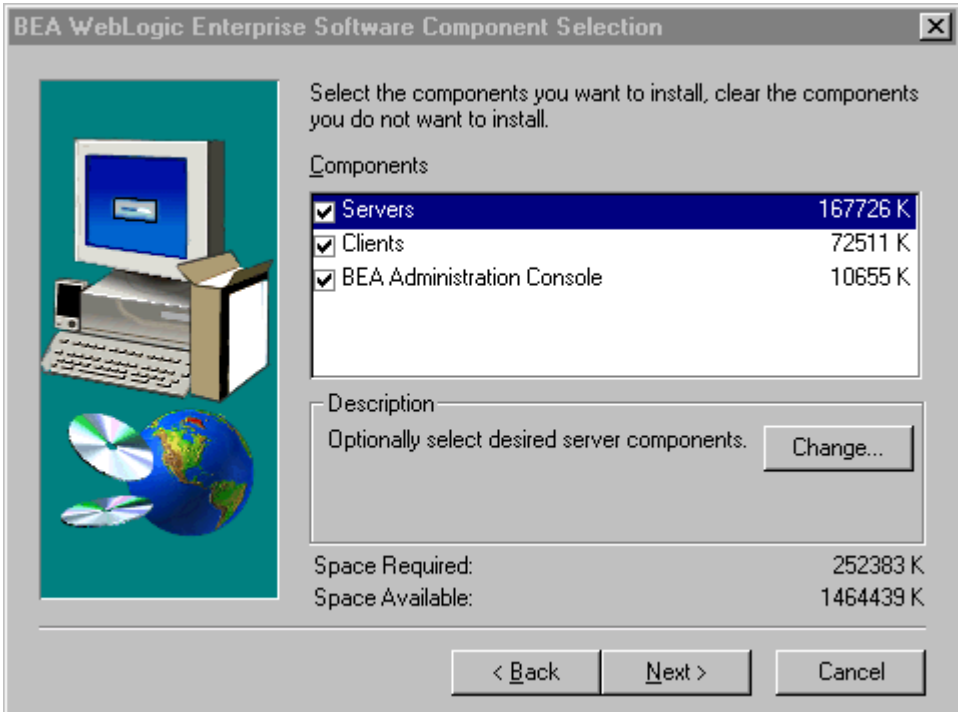
6. If the registration information is correct, click Yes; otherwise, click No and correct the information. The Choose Destination Location screen is displayed.



The default destination folder is `c:\wledir`. In the previous sample screen, the user selected `d:\wledir` (or this was the location of previously installed software).

7. Click Next to accept the location, or click Browse to select a different location. If you enter a path that does not exist, the installation procedure prompts for a confirmation that you want the directory created.

   After you complete the directory path screen, the BEA WebLogic Enterprise Software Component Selection screen is displayed.



8. By default, all WebLogic Enterprise components are selected for installation. The WebLogic Enterprise 5.1 installation procedure lets you select or deselect the components that you want to install. You can also select or deselect specific subcomponents within the Servers or Clients categories. The BEA Administration Console component does not have any subcomponents.

   You must select at least one component for installation. Selecting a main component category causes all of its subcomponents to be selected. Deselecting a component causes all of its subcomponents to be deselected. Deselecting all subcomponents causes their parent component to be deselected.

   The main WebLogic Enterprise categories for the installation are:

   - Servers
   - Clients
   - BEA Administration Console

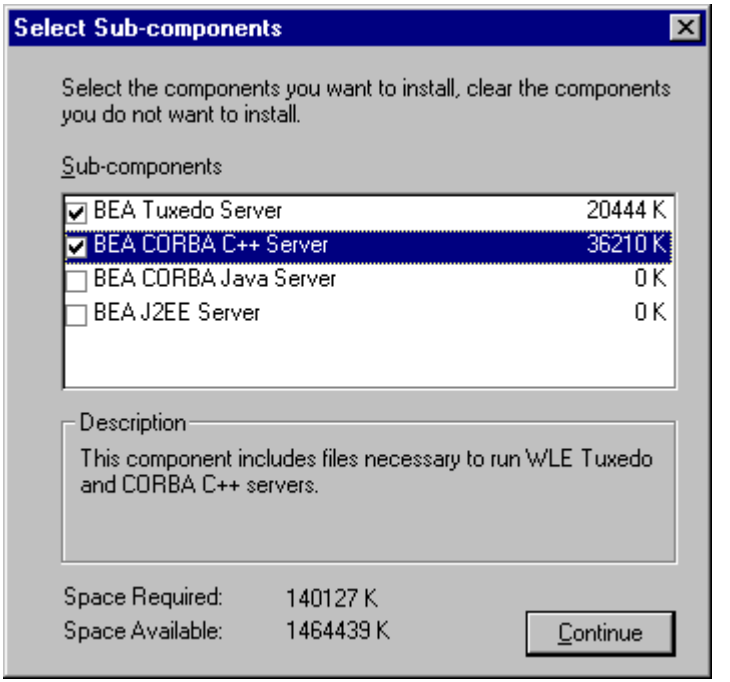
To deselect or select particular servers for installation, **highlight the Servers category** and then click the Change... button. On the Select Sub-components screen, deselect the server types you want to omit. Within the Servers category, the options are:

- BEA Tuxedo Server
- BEA CORBA C++ Server
- BEA CORBA Java Server
- BEA J2EE Server

Notes: The BEA Tuxedo Server is always installed in a Server installation, even if you deselect it on this screen.

When you install an individual type of server software, its corresponding client software is also installed. For example, if you install the J2EE Servers software, the RMI/EJB client software is also installed automatically. Therefore, if you have installed a type of server software, you do not need to perform a separate installation for the client software for that server.

On the Select Sub-components screen, click the Continue button when you have made your choices. For example:

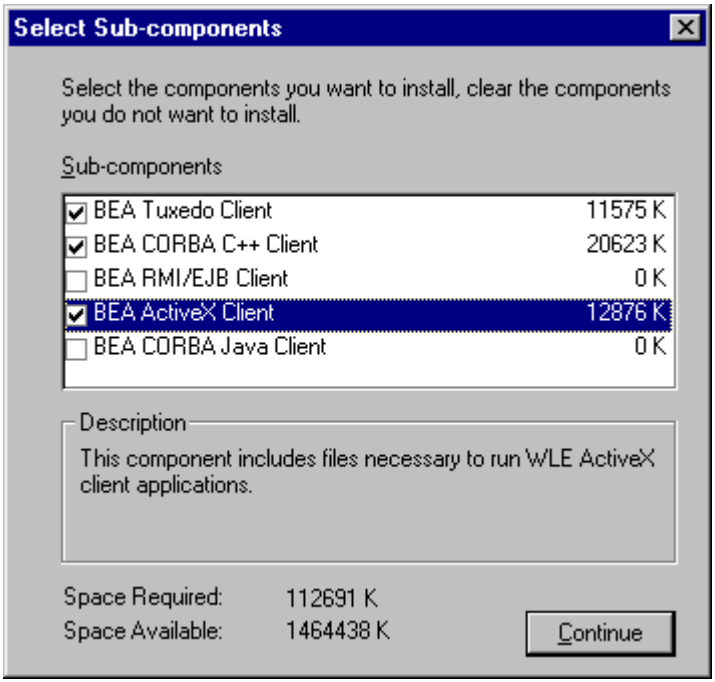


After you click the Continue button, you are returned to the BEA WebLogic Enterprise Software Component Selection screen.

To deselect or select particular clients for installation, **highlight the Clients category** and then click the Change... button. On the Select Sub-components screen, deselect the client types you want to omit. The Client options are:

- BEA Tuxedo Client
- BEA CORBA C++ Client
- BEA RMI/EJB Client
- BEA ActiveX Client
- BEA CORBA Java Client

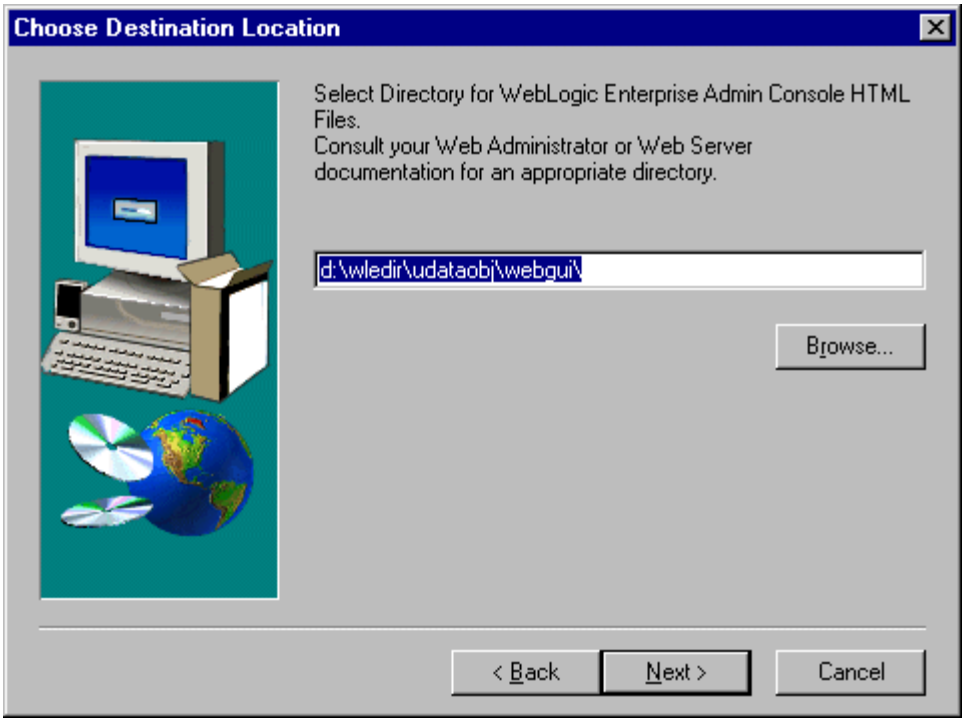
On the Select Sub-components screen for the clients, click the Continue button when you have made your choices. For example:



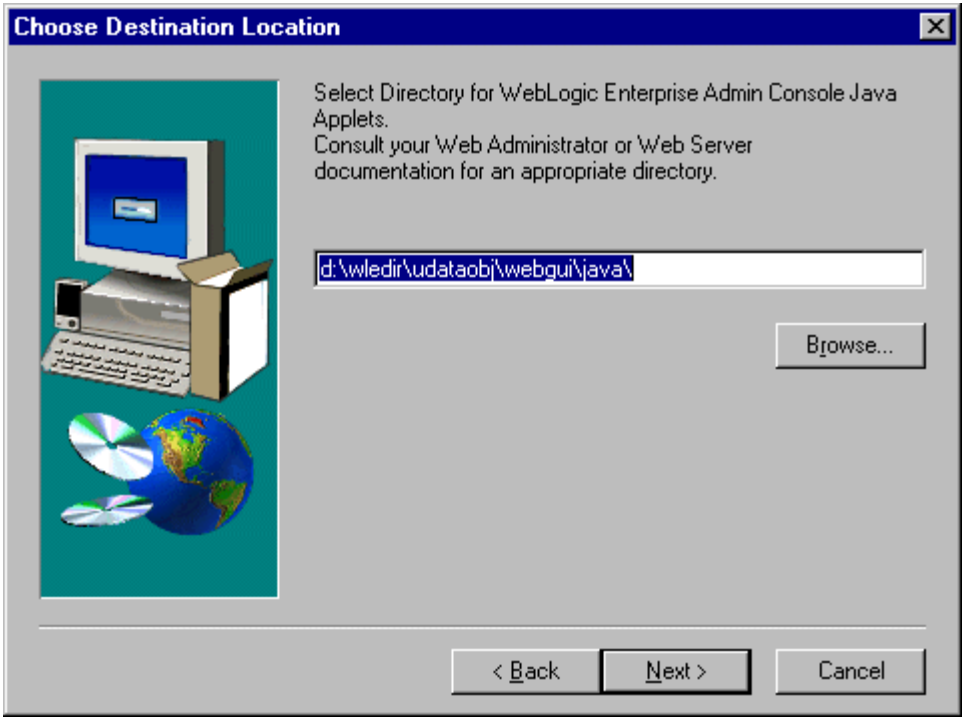
You are returned to the BEA WebLogic Enterprise Software Component Selection screen.

The Administration category consists of the Administration Console and does not have any subcomponents. For information about how to start this Console after it is installed, refer to Chapter 5, "BEA Administration Console Startup." For information about how to use this Console, refer to the online help that is accessible through the Console's Help button.

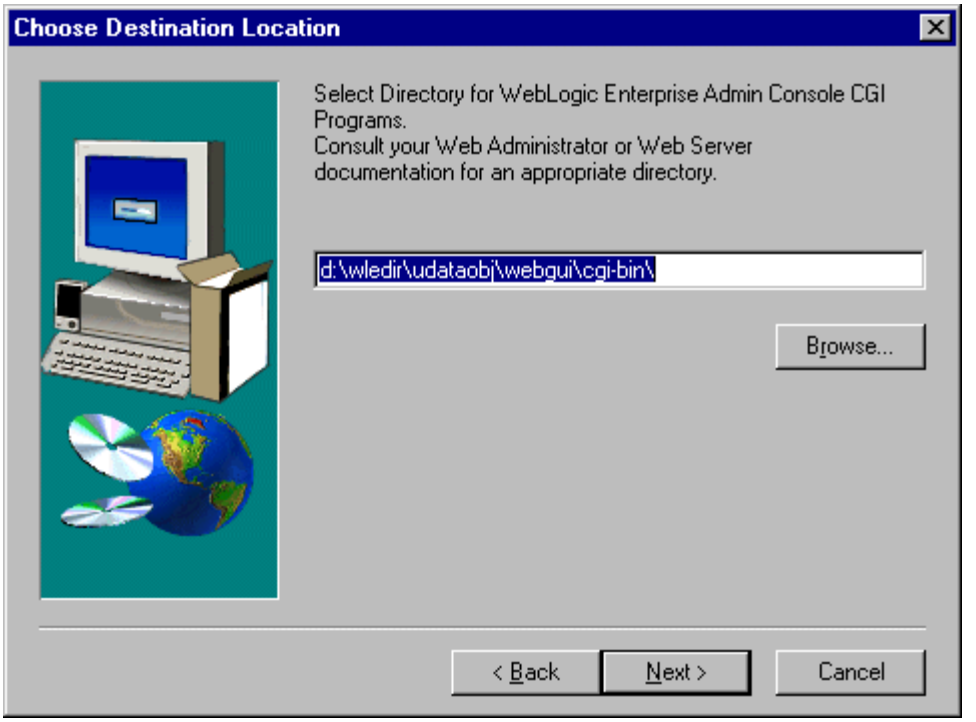
When you have made your selections, click Next. If you indicated that your installation will include the BEA Administration Console, the Choose Destination Location screen for the Administration Console HTML files is displayed.



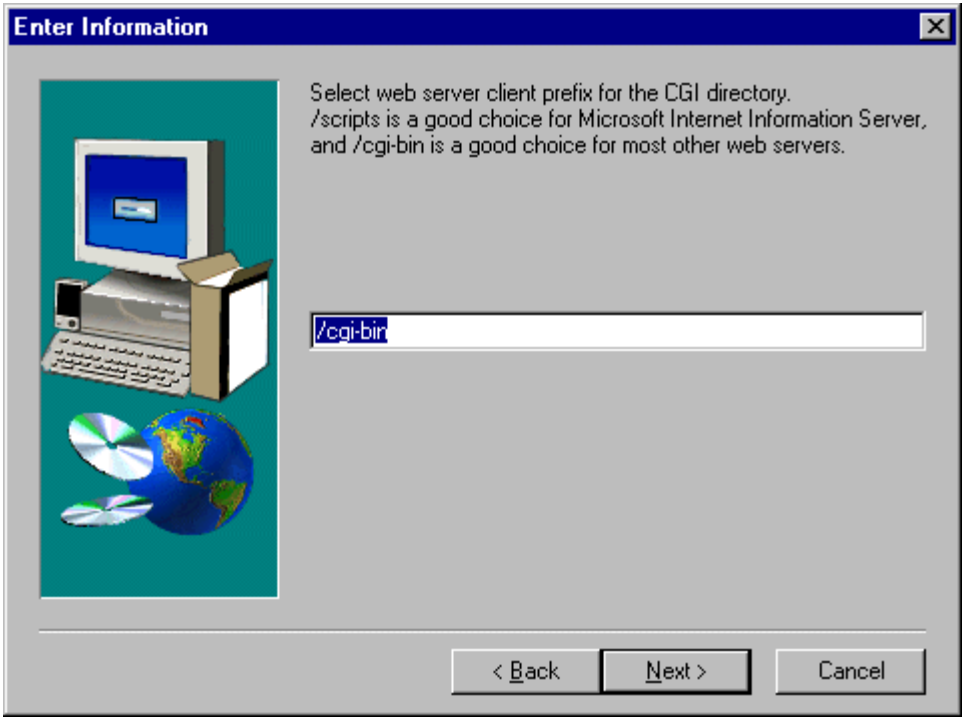
9. For information about the path on this screen, see the section "For All Server Platforms Supporting the BEA Administration Console" on page 1-15. To specify a nondefault directory for the BEA Administration Console HTML files, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



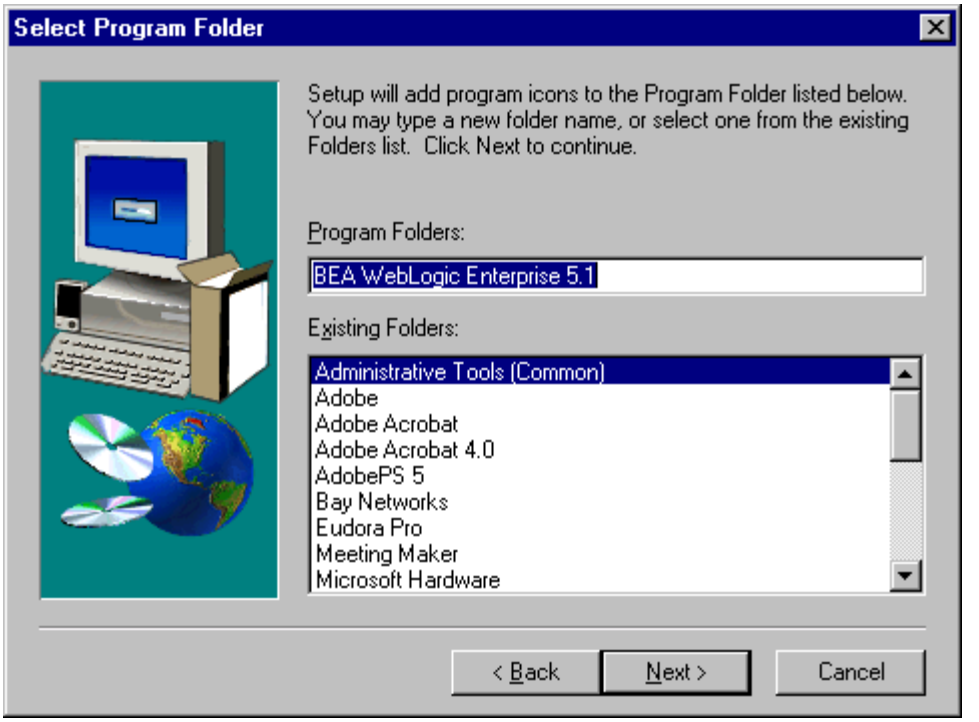
10. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-15. To specify a nondefault directory for the BEA Administration Console GUI Java applets, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. Another Choose Destination Location screen is displayed.



11. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-15. To specify a nondefault directory for the BEA Administration Console GUI CGI programs, click Browse, specify the nondefault directory, and click Next. Otherwise, click Next. The Enter Information screen is displayed.

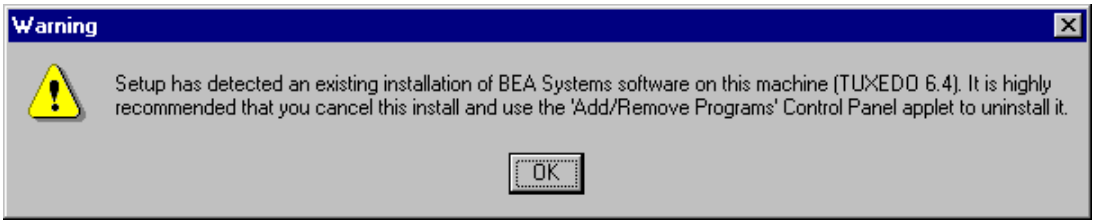


12. For information about the path on this screen, see the section “For All Server Platforms Supporting the BEA Administration Console” on page 1-15. To specify a nondefault Web Server client prefix for the GUI CGI directory, click Browse, specify the nondefault prefix, and click Next. Otherwise, click Next. The Select Program Folder screen is displayed.

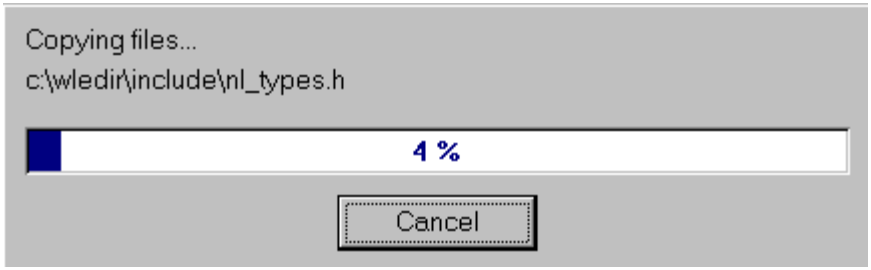


13. To specify a nondefault program folder name, enter the folder name or select a folder name from the Existing Folders, and click Next.

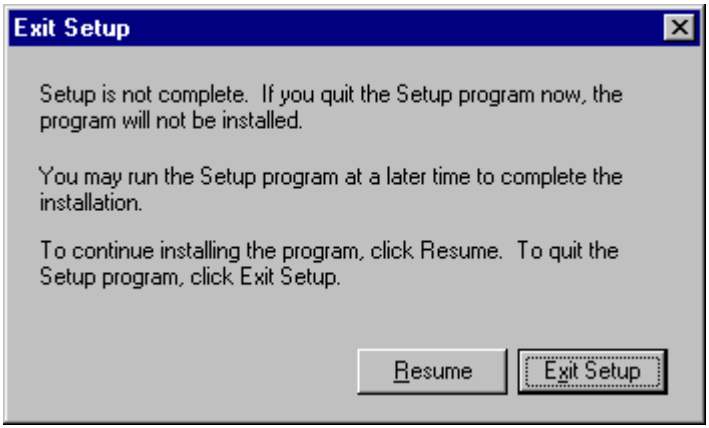
14. If the installation program detects a prior version of M3, WebLogic Enterprise, or BEA Tuxedo (or an earlier installation of WebLogic Enterprise 5.1) on the target system, the installation program recommends that you cancel the installation, exit Setup, and run the Windows Add/Remove program to remove it. For example:



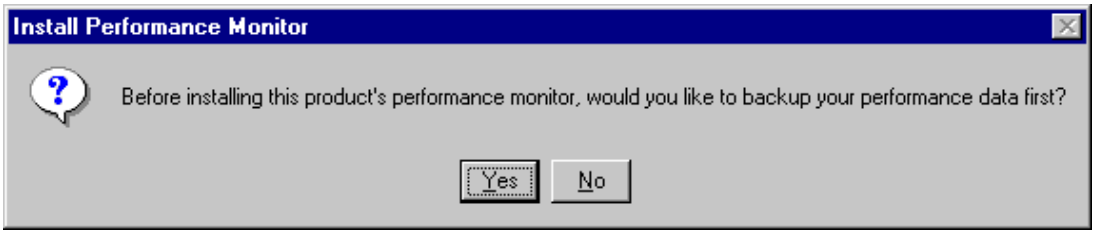
BEA recommends that you not run multiple versions of WebLogic Enterprise, M3, or BEA Tuxedo on the same machine. If you see this prompt, click the OK button, then click the Cancel button in the next screen:



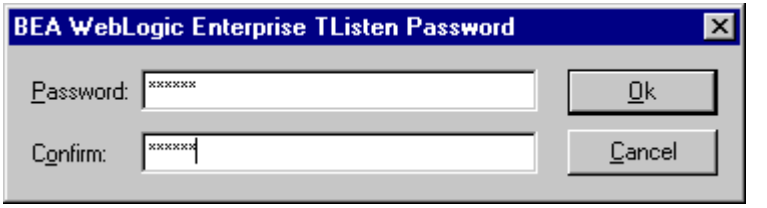
If you had to click the Cancel button because the installation program detected existing M3, WebLogic Enterprise, or BEA Tuxedo software on the target system, the installation program displays the following screen. Click the Exit Setup button, and then use the Windows Add/Remove program to remove the prior installation, as described in the section “Starting with a Clean System” on page 2-3.



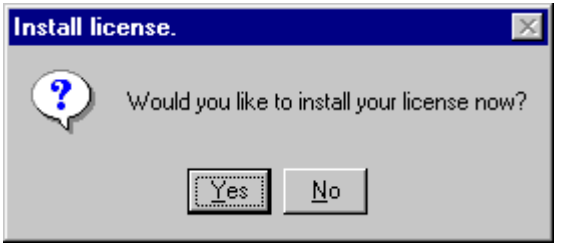
15. If you did not have to cancel the installation, the installation continues and you are prompted about having the installation program back up the target system’s performance data:



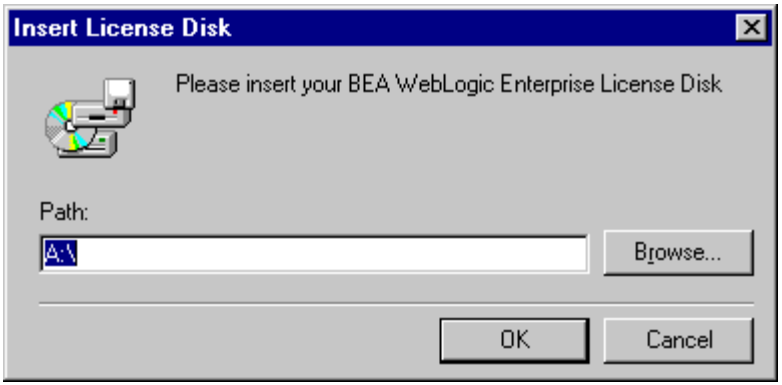
16. To back up your performance data files before you install the WebLogic Enterprise performance monitor, click Yes. The BEA WebLogic Enterprise TListen Password screen is displayed:



17. Enter the `tlisten` password in the Password field and again in the Confirm field and click Ok. If Cancel is clicked, the `tlisten` password installation is deferred. For information about the `tlisten` password and instructions for setting it, see the section "Selecting an Administrative Password" on page 1-17. The Install license screen is displayed.

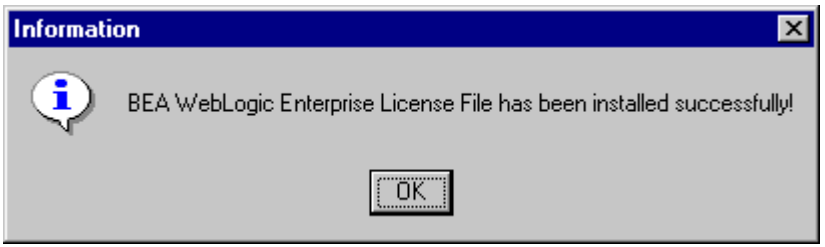


18. To install the WebLogic Enterprise software license now, click Yes; otherwise, click No to install the license later. If you click Yes, the Insert License Disk screen is displayed.

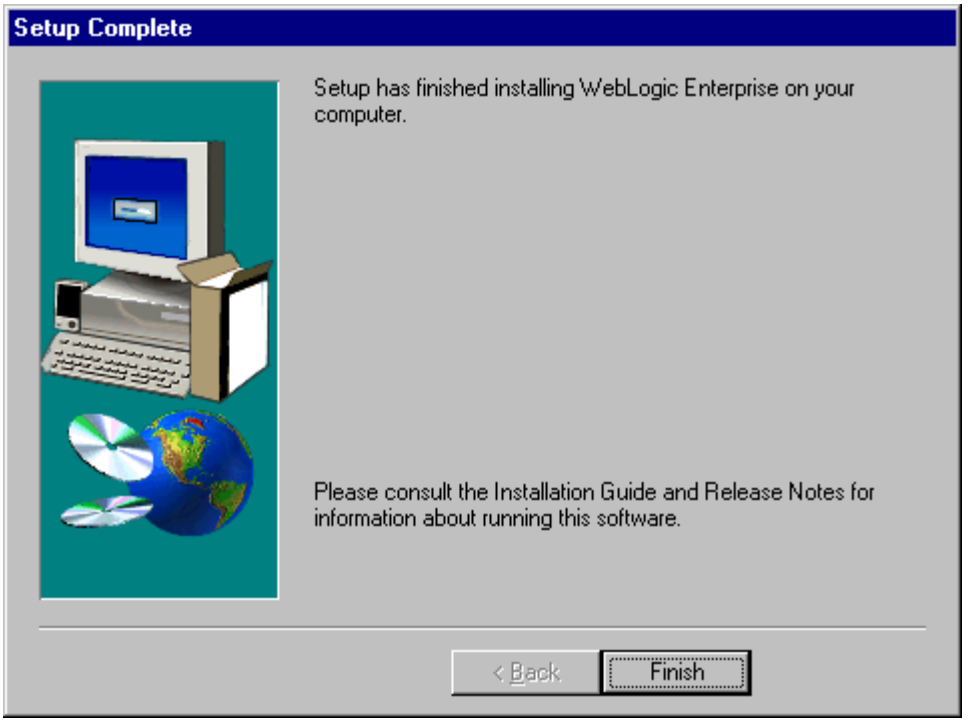


19. Your product license is on a 3.5-inch diskette that is included in the WebLogic Enterprise product box. To install the license, insert the license diskette in the disk drive on your machine and, if your diskette drive is drive A, click OK; otherwise, enter the correct drive and click OK. An Information screen is displayed informing you that the WebLogic Enterprise license file installed successfully.

    Note: If you decide that you do not want to install the license now, but you want to complete the installation procedure and install the license later, do not click Cancel. Clicking Cancel terminates the installation. Instead, remove the license diskette from the disk drive and click OK. A screen is displayed that states that the `lic.txt` could not be found and you can elect to complete the installation without installing the license.



20. Click OK. The installation procedure displays the following screen.



Click the Finish button to complete the installation.

21. Reboot your system.

Setting Microsoft Windows 2000 or NT 4.0 Environment Variables

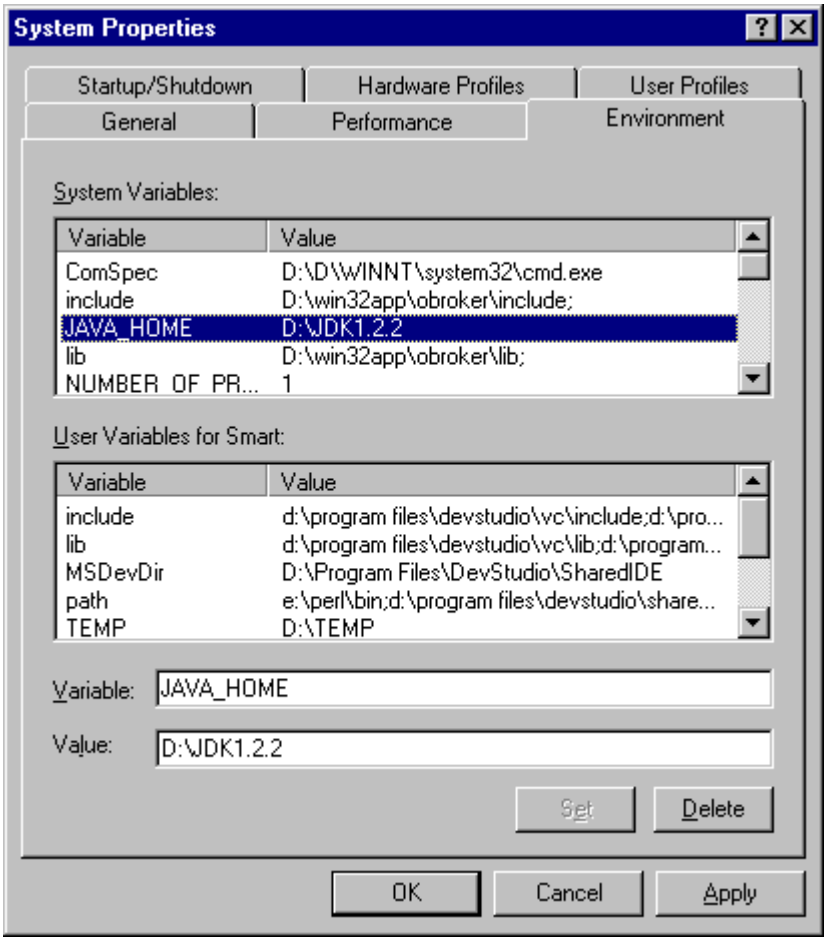
Before you use the WebLogic Enterprise software, you may need to define the `JDK_HOME` environment variable.

The `JAVA_HOME` variable is needed to start Java server applications and to build and run Java sample applications.

To set this variable, complete the following procedure:

1. Click the Windows Start button, and click Settings—>Control Panel—>System—>Environment.

   The System Properties screen is displayed.



2. Enter the `JAVA_HOME` environment variable and set its value to the directory containing the JDK, as shown in the sample screen.

   Note: JavaServer will not start on Microsoft Windows NT or Windows 2000 if JDK bin is in the path after a network drive. Make sure the JDK bin directories (that is, jre/bin and jre/bin/classic) are set in the PATH before

any network driver path elements via the Control Panel before booting the JavaServer.

3. Click Apply and OK to close the System Properties window.

Installing the Product License After You Install the WebLogic Enterprise Software

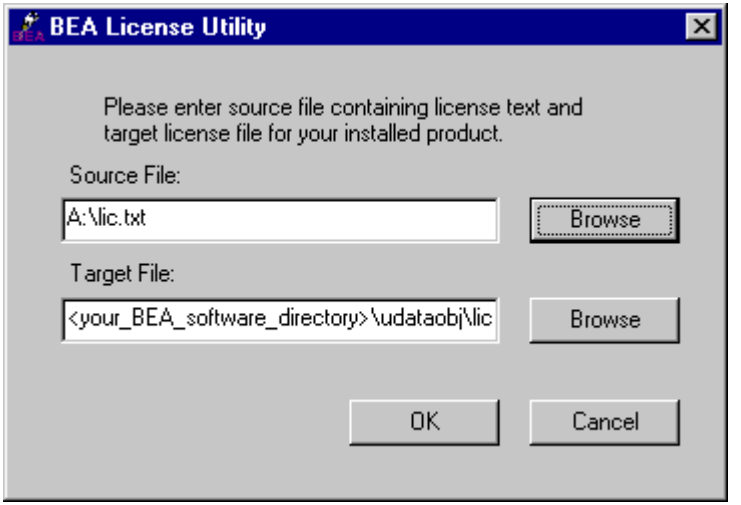
If you elected not to install your software license when you installed the WebLogic Enterprise software, you can install the license using the BEA License Utility.

Note: Your product license is on a 3.5-inch disk that is included in the software box.

To install the license, complete the following steps:

1. Insert the license disk into the disk drive on your machine.
2. Use the taskbar to click Start—>Programs—>BEA WebLogic Enterprise 5.1 —>BEA License Utility 5.1.

   The BEA License Utility screen is displayed.



3. If the disk drive on your machine is drive A, click OK; otherwise, enter the correct drive and click OK. The license is installed and the License File updated message is displayed.

Running Simpapp to Verify the WebLogic Enterprise CORBA ++ Software Installation on Microsoft Windows 2000 or NT 4.0

To verify that you have successfully installed the WebLogic Enterprise CORBA C++ client and server software, execute the `simpapp` application. This "simple application" is a WebLogic Enterprise client/server application that converts text strings to uppercase and lowercase letters, and can verify whether your installation is successful.

Note: This section assumes you installed all WebLogic Enterprise server components, or one of the CORBA server components. If you installed only the J2EE server component, see the next section, "Running a Basic EJB Sample to Verify the WebLogic Enterprise J2EE Software Installation" on page 2-35, for information about running an EJB sample to verify the installation.

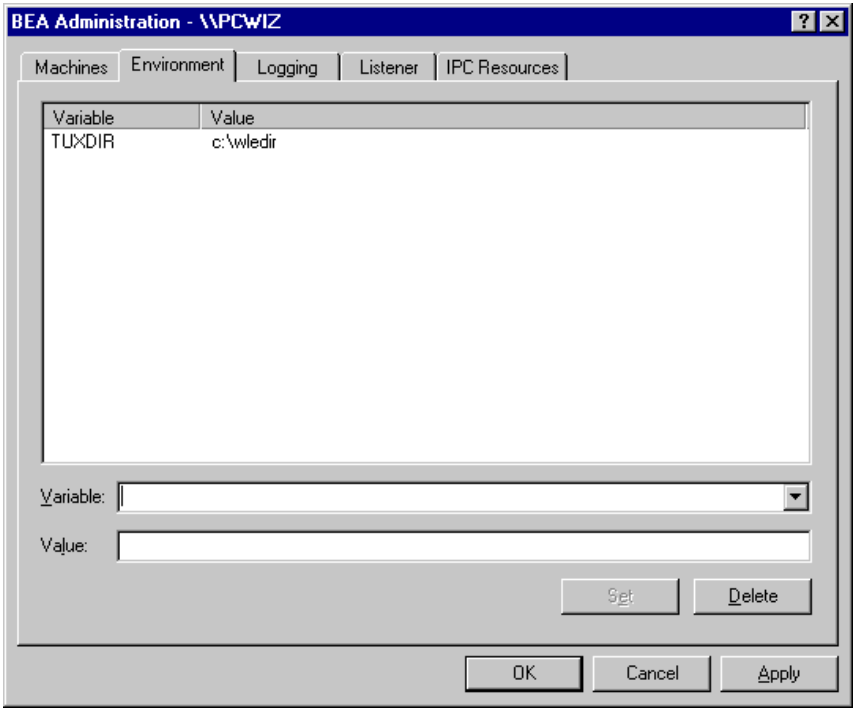
Before attempting to run `simpapp`, refer to the section "Software Requirements" on page 6-25 to ensure that the software requirements are satisfied. For example, the path to the Microsoft Visual C++ 6.0 environment must be known on this system, because `nmake` is used.

To run `simpapp`, open an MS-DOS window and complete the following steps:

1. Make sure that the directory in which you installed the WebLogic Enterprise software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, complete the following steps to set the `TUXDIR` environment variable to `C:\WLEDIR`:

   a. On the Windows Start menu, click Settings—>Control Panel. The Control Panel is displayed.

   b. Click the BEA Administration icon. The BEA Administration screen is displayed.



c. If the BEA Administration screen is not displaying the Environment page as shown in the above screen, click the Environment tab. The Environment page is displayed.

d. Click on the `TUXDIR` variable, enter `C:\WLEDIR` in the value field, and click OK.

2. Using Windows Explorer, create a directory under `WLEDIR` and copy the contents of the `simpapp` directory to it. If you installed the WebLogic Enterprise software in the default directory, the `simpapp` directory is located at `C:\WLEDIR\Samples\Corba\Simpapp`.

3. Using an MS-DOS window:

   a. Change (`cd`) to the copy directory.

   b. Check the permissions on all the files in the copy directory and, if necessary, change the permissions to allow full access. To set permissions to full access, enter `attrib -R /S *.*`.

4. To run `simpapp` automatically, enter `runme`. The `simpapp` application runs and prints the following messages:

```
Testing simpapp
    cleaned up
    prepared
    built
    loaded ubb
    booted
    ran
    shutdown
    saved results
  PASSED
```

5. To run the sample manually to observe the `simpapp` processes starting and stopping, complete the following steps:

   a. Enter `results\setenv`.

   b. Enter `tmboot -y`. The application starts several processes.

   c. Enter `simple_client`. The prompt `String?` is displayed.

   d. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters.

   e. Enter `tmshutdown -y`. The application shuts down the processes.

6. To restore the directory to its original state, enter the following:

   a. `results\setenv`

   b. `nmake -f makefile.nt clean`

Running Simpapp to Verify the WebLogic Enterprise CORBA Java Software Installation on Microsoft Windows 2000 or NT 4.0

To verify that you have successfully installed the WebLogic Enterprise CORBA Java client and server software, execute the `simpapp_java` application. This "simple application" is a WebLogic Enterprise client/server application that converts text strings to uppercase and lowercase letters, and can verify whether your installation is successful.

Notes: This section assumes you installed all WebLogic Enterprise server components, or the CORBA Java server components. If you installed only the J2EE server component, see the next section, "Running a Basic EJB Sample to Verify the WebLogic Enterprise J2EE Software Installation" on page 2-35, for information about running an EJB sample to verify the installation.

If you have installed the CORBA Java server components, the CORBA C++ components are also automatically installed. Therefore, if running `simpapp_java` as described in this section is successful, it also verifies that the CORBA C++ components were installed correctly.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software. For example, on NT systems, you must first download and install the Java 2 SDK version 1.2.2.

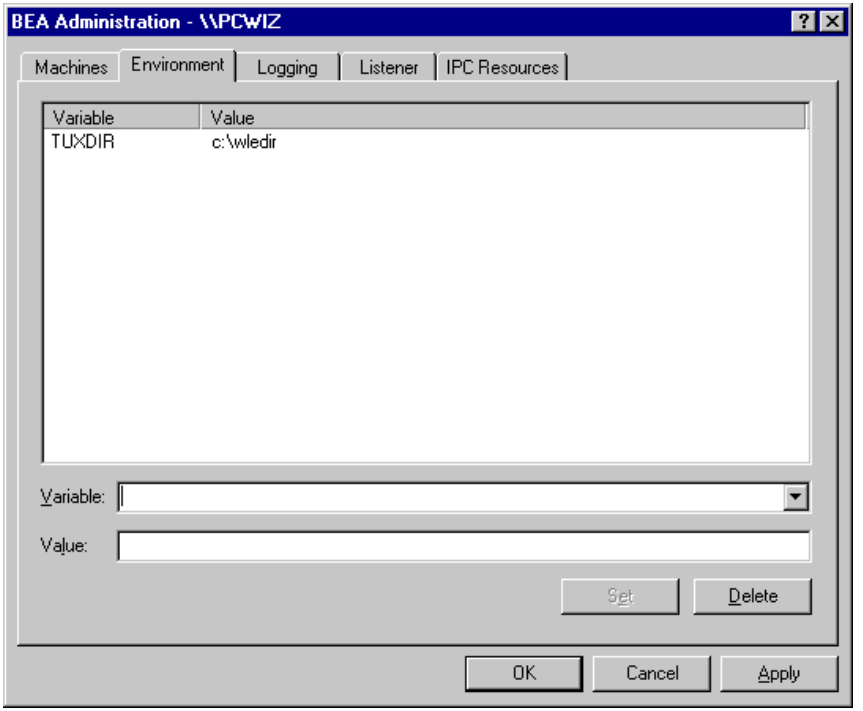
Before attempting to run `simpapp_java`, refer to the section "Software Requirements" on page 6-25 to ensure that the software requirements are satisfied. For example, the path to the Microsoft Visual C++ 6.0 environment must be known on this system, because `nmake` is used.

To run `simpapp`, open an MS-DOS window and complete the following steps:

1. Make sure that the directory in which you installed the WebLogic Enterprise software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, complete the following steps to set the `TUXDIR` environment variable to `C:\WLEDIR`:

   a. On the Windows Start menu, click Settings—>Control Panel. The Control Panel is displayed.

b. Click the BEA Administration icon. The BEA Administration screen is displayed.



c. If the BEA Administration screen is not displaying the Environment page as shown in the above screen, click the Environment tab. The Environment page is displayed.

d. Click on the `TUXDIR` variable, enter `C:\WLEDIR` in the value field, and click OK.

2. Using Windows Explorer, create a directory under `WLEDIR` and copy the contents of the `simpapp` directory to it. If you installed the WebLogic Enterprise software in the default directory, the `simpapp_java` directory is located at `C:\WLEDIR\Samples\Corba\Simpapp_java`.

3. Using an MS-DOS window:

   a. Change (`cd`) to the copy directory.

   b. Check the permissions on all the files in the copy directory and, if necessary, change the permissions to allow full access. To set permissions to full access, enter `attrib -R /S *.*`.

4. To run `simpapp_java` automatically, enter `runme`. The `simpapp_java` application runs and prints the following messages:

```
Testing simpapp
    cleaned up
    prepared
    built
    loaded ubb
    booted
    ran
    shutdown
    saved results
  PASSED
```

5. To run the sample manually to observe the `simpapp_java` processes starting and stopping, complete the following steps:

   a. Enter `results\setenv`.

   b. Enter `tmboot -y`. The application starts several processes.

   c. Enter `simple_client`. The prompt `String?` is displayed.

   d. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters.

   e. Enter `tmshutdown -y`. The application shuts down the processes.

6. To restore the directory to its original state, enter the following:

   a. `results\setenv`

   b. `nmake -f makefile.nt clean`

Running a Basic EJB Sample to Verify the WebLogic Enterprise J2EE Software Installation

If you installed only the WebLogic Enterprise J2EE server component, you can run the stateless session EJB sample application provided by the WebLogic Enterprise software to verify the installation.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software.

This sample demonstrates the usage of a stateless session EJB using a simple stock trader application. This sample demonstrates how the client must maintain any persistent state—such as the change in the cash account—across repeated calls to the session EJB. All the logic for the balance is encapsulated in the client, where all the persistence is provided by the container and the logic is maintained in the EJB.

The EJB in this sample provides basic trading methods, such as buying and selling stocks. Because there are no persistent stores involved in this sample, all the stock data are set in the deployment descriptor of the EJB as environment properties. The container supplies the data to the EJB through a JNDI lookup operation.

To build the stateless session EJB sample application, use the following steps:

1. Make sure that the directory in which you installed WebLogic Enterprise is set in the environment variable `TUXDIR`. Make sure to set the `JAVA_HOME` environment variable.
2. Make a copy of the `%TUXDIR%\samples\j2ee\ejb` directory into a work directory.
3. Change directory to the work directory.
4. Change the permissions on all the files to give them write-access. For example:

   ```
   prompt>attrib /S -r *
   ```

5. Run the JavaServer version of the sample automatically by entering the `runme` command:

   ```
   prompt>runme basic statelessSession
   ```

6. A number of messages are displayed, along with information about whether the build procedure was successful. The sample is built, the servers are booted, and the client is run once.

After you have executed the `runme` command, you can run the samples manually if you like.

To run the samples manually:

1. Change the current directory to the `basic\statelessSession` directory.

2. Make sure that your environment is set correctly by entering the following command:

   ```
   prompt>setenv
   ```

3. Boot the server, run the client, and shut down the server by entering the following commands:

   ```
   prompt>tmboot -y
   prompt>run_client.cmd
   prompt>tmshutdown -y
   ```

To restore the sample application directory to its original state:

1. Change to the work directory.
2. Enter the following command, where `TUXDIR` is the directory in which you installed the WebLogic Enterprise software:

   ```
   prompt>%TUXDIR%\samples\j2ee\ejb\clean.cmd
   ```

For more information about the stateless session EJB sample application, see the *Guide to the EJB Sample Applications* in the WebLogic Enterprise online documentation.

Installing the WebLogic Enterprise Software on Microsoft Windows 98 and 95 Systems

Notes: Before beginning the installation, ensure that no BEA Tuxedo or WebLogic Enterprise applications are running.

It takes approximately 10 minutes to install the software.

Warning: If you are **re-installing the WebLogic Enterprise 5.1 software** on your system, and you already installed the optional WebLogic Enterprise 5.1 Encryption Package software (56-bit or 128-bit) on your system, you must:

a. First, uninstall the WebLogic Enterprise Encryption Package software. (See the section "Removing (Uninstalling) the WebLogic Enterprise Encryption Package from Your System" on page 12-14.)

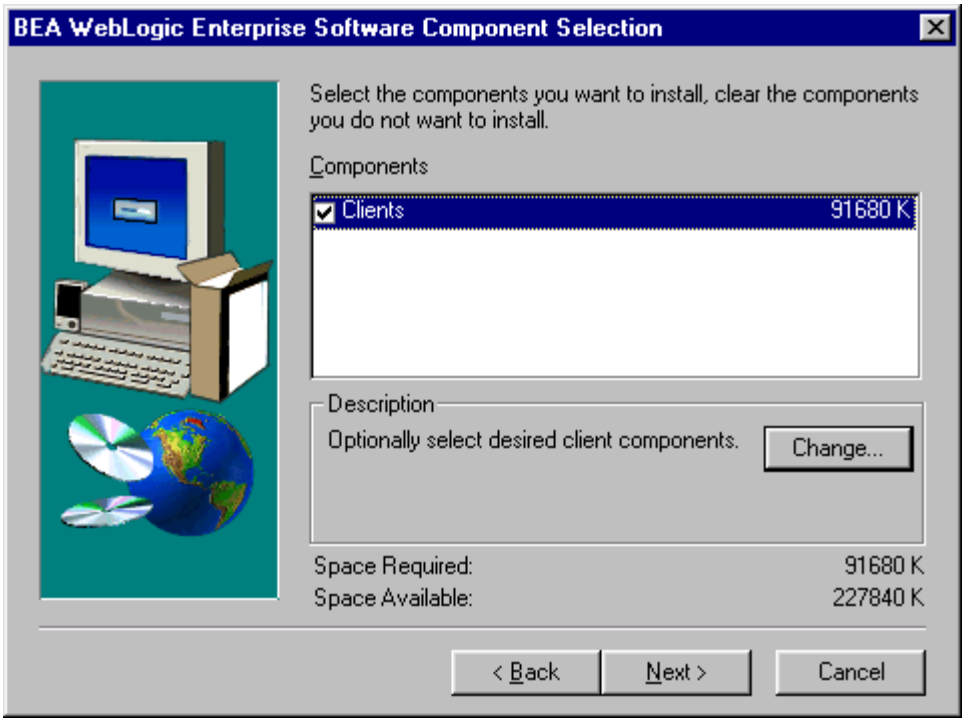
b. Next, uninstall the WebLogic Enterprise 5.1 software. (See the section "Removing (Uninstalling) the WebLogic Enterprise Software from Your System" on page 2-43.)

c. Re-install the WebLogic Enterprise 5.1 software, as explained in this section.

To install the BEA WebLogic Enterprise software on a Microsoft Windows 98 or 95 operating system, follow the steps listed below.

Note: In this section, installation screens that are identical to the screens shown in the Windows 2000 and NT 4.0 section are not repeated.

1. Insert the BEA WebLogic Enterprise software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)
2. The Setup screen is displayed, followed by the Welcome screen.
3. Click Next. The Software License Agreement screen is displayed.
4. To accept the license agreement, click Yes. The User Information screen is displayed.
5. Enter your name and the name of your company and click Next. The Registration Confirmation screen is displayed.
6. If the registration information is correct, click Yes; otherwise, click No and correct the information. The Choose Destination Location screen is displayed.
7. The default destination folder is `c:\wledir`. Click Next to accept this location, or click Browse to select a different location. If you enter a path that does not exist, the installation procedure prompts for a confirmation that you want the directory created.
8. After you complete the directory path screen, the BEA WebLogic Enterprise Software Component Selection screen is displayed. For an installation on a Windows 98 or Windows 95 system, you can only install components from the client list.



To deselect or select particular clients for installation, click the Change... button. On the Select Sub-components screen, deselect the client types you want to omit. The Client options are:

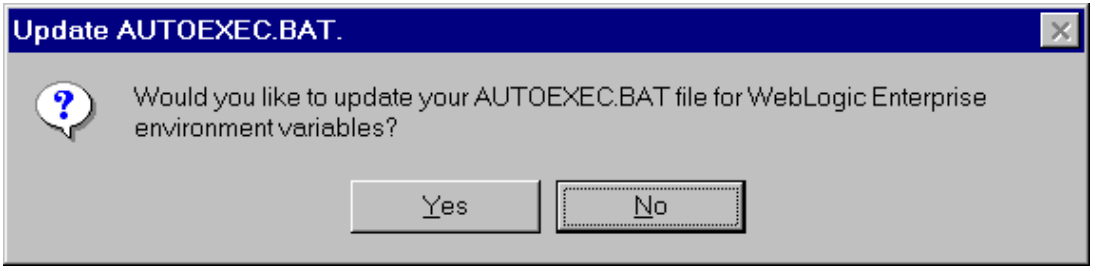
- BEA Tuxedo Client
- BEA CORBA C++ Client
- BEA RMI/EJB Client
- BEA ActiveX Client
- BEA CORBA Java Client

On the Select Sub-components screen for the clients, click the Continue button when you have made your choices. Then click the Next button on the Software Components Selection screen.

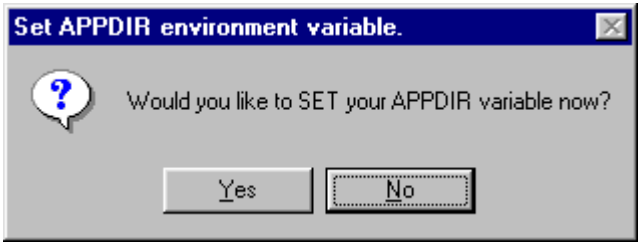
9. The Select Program Folder screen is displayed. To specify a nondefault program folder name, enter the folder name or select a folder name from the Existing Folders, and click Next.

10. If a prior version of WebLogic Enterprise exists on your system, the installation procedure prompts you to remove it.

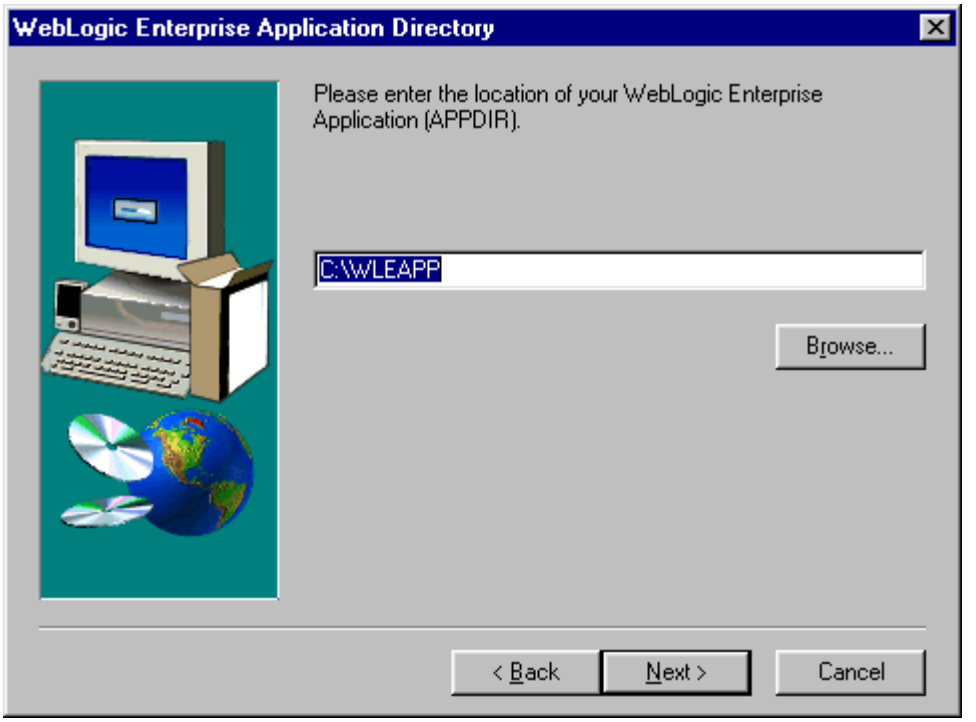
11. The WebLogic Enterprise software is installed. When the software installation completes, the Update AUTOEXEC.BAT screen is displayed.



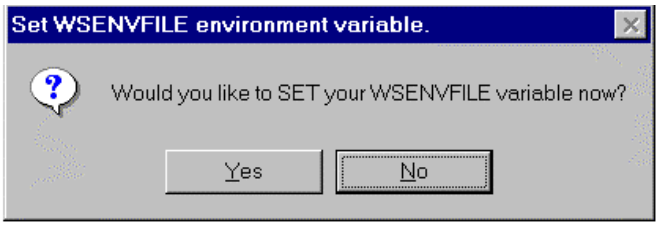
12. Click Yes to update the `AUTOEXEC.BAT` file. The Set APPDIR environment variable screen is displayed.



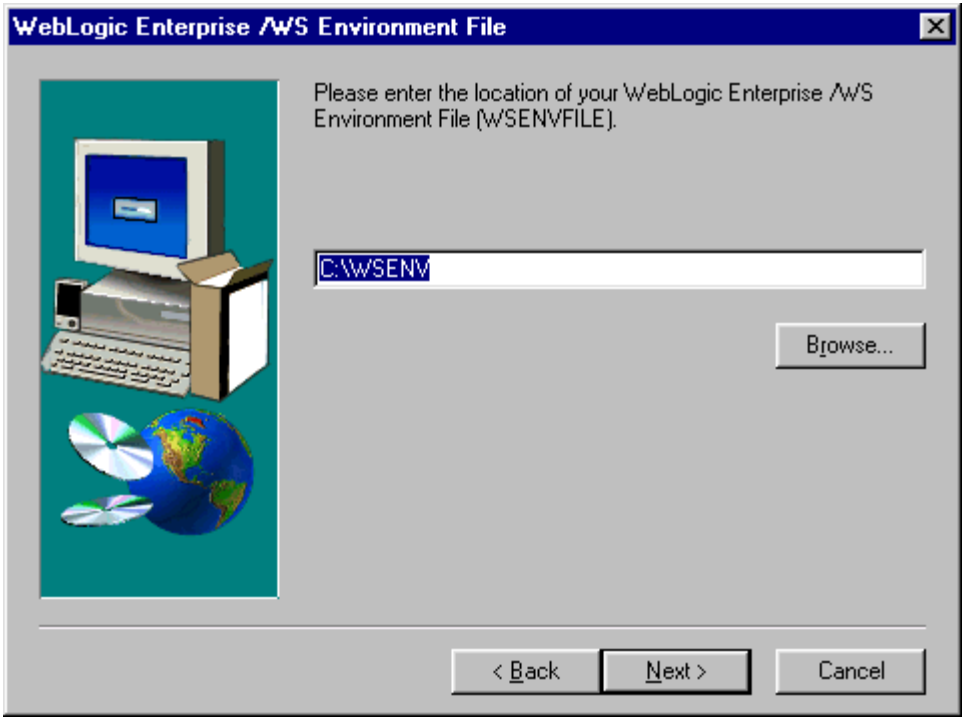
13. Click Yes. The WebLogic Enterprise Application Directory screen is displayed.



14. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. If the BEA Tuxedo Client was selected, the Set WSENVFILE environment variable screen is displayed.

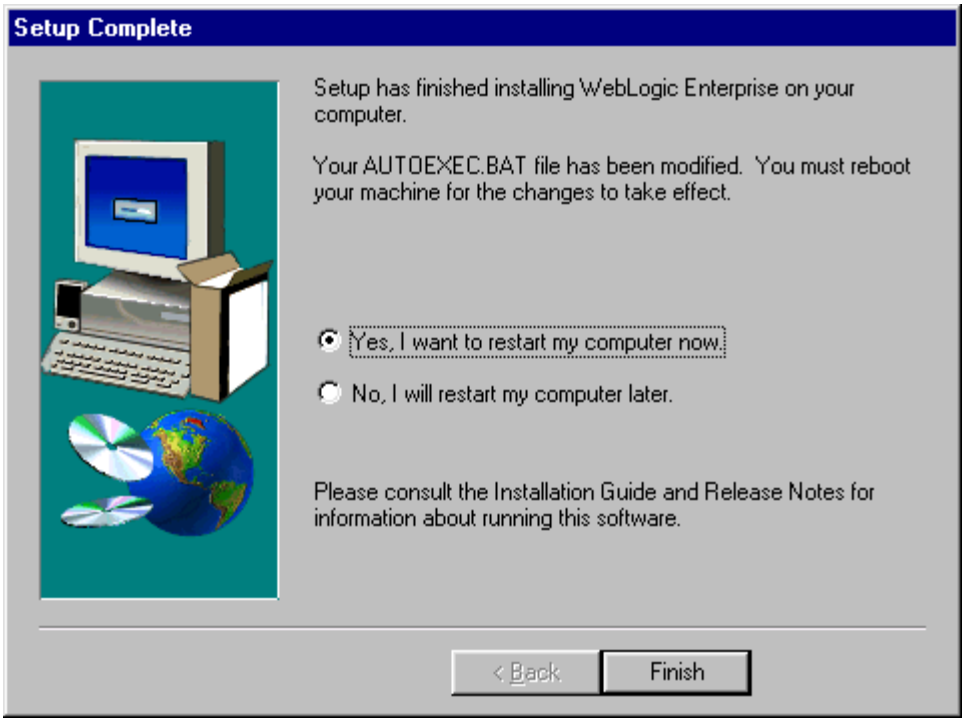


15. To set the WSENVFILE environment variable, click Yes. The WebLogic Enterprise /WS Environment File screen is displayed.



16. To accept the default directory, click Next. To specify a nondefault directory, click Browse, enter the desired directory, and click Next. The Setup is verifying installation screen is displayed.

17. After the installation program verifies the installation, the installation is completed. If you had the installation program update your AUTOEXEC.BAT file, the following screen is displayed.



18. Click the Finish button and **reboot your system.**

Removing (Uninstalling) the WebLogic Enterprise Software from Your System

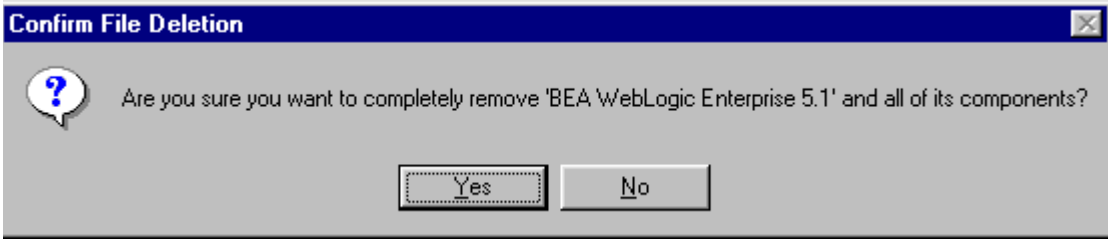
This section explains how to remove the WebLogic Enterprise software from your system.

Warning: If you also installed the optional WebLogic Enterprise Encryption Package software (56-bit or 128-bit) on your system, you must:

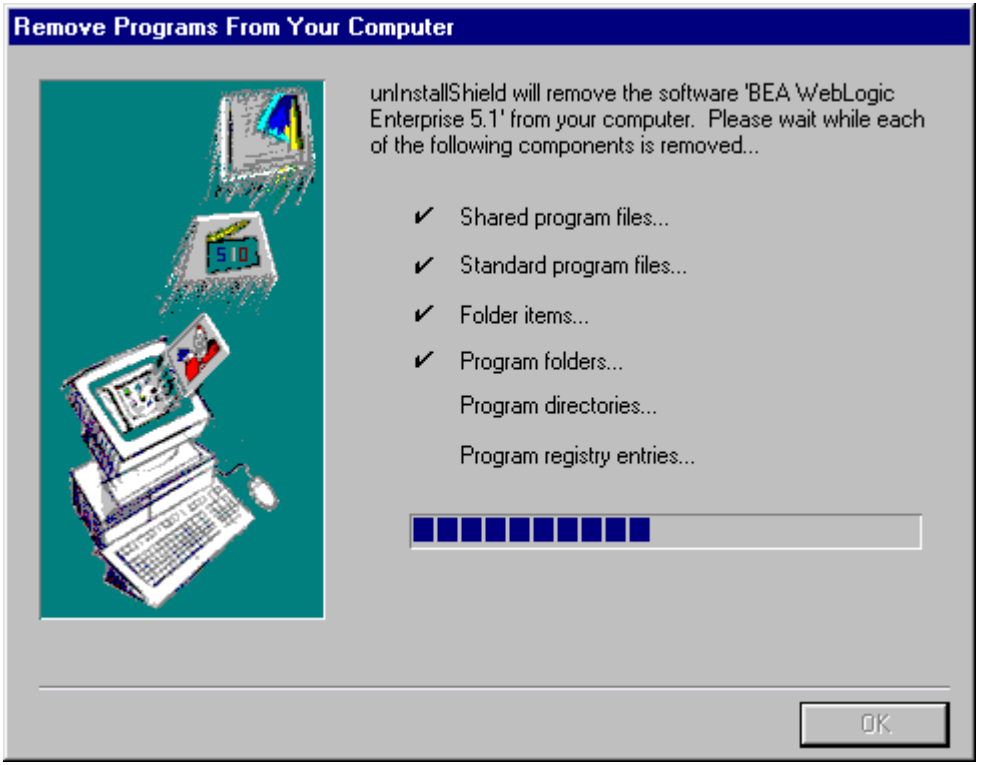
- First uninstall the WebLogic Enterprise Encryption Package software. (See the section “Removing (Uninstalling) the WebLogic Enterprise Encryption Package from Your System” on page 12-14.)
- Next, uninstall the WebLogic Enterprise software, as explained in this section.

To remove the WebLogic Enterprise software from your system:

1. Log on to the system. If you are using a Microsoft Windows 2000 or NT 4.0 system, log on as the administrator or as a member of the Administrator group.
2. Make sure that no BEA Tuxedo or WebLogic Enterprise client or server applications are running. Use `tmshutdown` to shut down all WebLogic Enterprise applications.
3. On the Microsoft Windows taskbar, click Start—>Programs—>BEA WebLogic Enterprise 5.1—>UnInstall BEA WebLogic Enterprise 5.1. The Confirm File Deletion screen is displayed:



4. Click Yes to confirm the removal and uninstall the WebLogic Enterprise software. The Remove Programs From Your Computer screen is displayed.



The WebLogic Enterprise product is removed from your system and from the Windows Registry. **Reboot your system.**

3 WebLogic Enterprise T-Engine Installation on UNIX Systems

This topic includes the following sections:

- Platforms Supported
- Installing the WebLogic Enterprise Software on UNIX Systems
- Removing (Uninstalling) the WebLogic Enterprise Software from Your System

Note: Part of the installation procedure described in this chapter includes running a sample application to verify that the installation is successful. If you are installing either the CORBA Java or J2EE software, and you want to run this sample application, you need to have the Java 2 SDK version 1.2.2 software installed on your system.

Platforms Supported

The platforms listed in Table 3-1 are supported.

Table 3-1 Supported Platforms

Vendor	Operating System	Release/Version
Compaq	Tru64 UNIX	4.0f on Alpha systems
HP	HP-UX	11.00 32-bit plus patches B.11.00.B0315
IBM	AIX	4.3.3
SCO	UnixWare	7.1.1 (C++ only)
Sun Microsystems	Solaris	2.6 and 7 (SPARC)

Notes: The WebLogic Enterprise 5.1 software for Solaris is available in two varieties, depending upon whether you are building WebLogic Enterprise applications with either the Standard Mode or Compatibility Mode of the Sun Workshop Compiler C++ 5.0 software. For **important details** about how to choose the version of WebLogic Enterprise 5.1 for Solaris you need, see **step 6** in the section "UNIX Installation Procedure" on page 3-4.

If you install the WebLogic Enterprise software on a Solaris system, there is a way to tell which version of WebLogic Enterprise (Standard Mode or Compatibility Mode) was installed. The `/udataobj` directory under the installed WebLogic Enterprise directory will contain either a `CompatibilityMode.txt` file or a `StandardMode.txt` file. The file has one line that states: `You have installed components for Sun Solaris v<OS-version> <mode-type>`.

For the hardware and software requirements for these operating systems, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

Installing the WebLogic Enterprise Software on UNIX Systems

This section describes how to install the WebLogic Enterprise software on UNIX systems.

Preinstallation Considerations

This section describes some important tasks that you should perform before starting the WebLogic Enterprise installation.

Backing Up Files

If you are installing WLE software on a system that already has M3 or WebLogic Enterprise software installed, there are some files that you may want to back up prior to the installation, and then restore them after the installation is complete. This is because some files that you may have modified for your M3 or WebLogic Enterprise software are overwritten when the WebLogic Enterprise software is installed.

To avoid having to modify these files again, proceed as follows:

1. If you are installing one or more of the WLE server software components, back up the `RM` file to a temporary location. This file is located in the `TUXDIR/udataobj` directory where `$TUXDIR` is the directory in which the prior WebLogic Enterprise or M3 software exists.
2. If you are installing the BEA Administration Console, back up the `webgui.ini` file to a temporary location. This file is located in the `M3DIR/udataobj/webgui` or `WLEDIR/udataobj/webgui` directory.
3. After the installation is complete, restore these files to their original locations.

Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services

Before beginning the installation, make sure no BEA Tuxedo or WebLogic Enterprise client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the *Administration* section of the WebLogic Enterprise online documentation.

Checking That Your Account Has the Required Privileges

On most systems, you need superuser privileges to mount the software CD. The account that you log on to to perform the installation must have administrative privileges.

UNIX Installation Procedure

It takes approximately 10 minutes to install the software.

Warning: If you are **re-installing the WebLogic Enterprise 5.1 software** on your system, and you also already installed the optional WebLogic Enterprise Encryption Package software (56-bit or 128-bit) on your system, you must:

- First, uninstall the WebLogic Enterprise 5.1 software on your UNIX system, which also removes the WebLogic Enterprise Encryption Package software. (See the section "Removing (Uninstalling) the WebLogic Enterprise Software from Your System" on page 3-19.)
- Next, re-install the WebLogic Enterprise 5.1 software, as explained in this section.

To install the WebLogic Enterprise software on a UNIX operating system, complete the following steps:

1. Log on to the system with administrative privileges.
2. Insert the WebLogic Enterprise CD into the reader.
3. Mount the CD as a file system. For platform-specific instructions on how to do this, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets." On most systems, you need superuser privileges to perform the mount.

Note: If your system does not have a directly connected CD reader, you can mount the CD on a remote system, share (export) the CD file system, and then mount the remote file system. For detailed instructions for each platform, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets." Alternatively, you can mount the CD on a remote system, copy the contents of the CD directory for your platform to the system in which you plan to install the WebLogic Enterprise software, and continue with the remainder of the installation procedure.

4. Use the `cd` command to change your working directory to the root of the WebLogic Enterprise 5.1 software CD.

5. Run the `ls` command in the root directory to check the CD's contents. If all the files are in lowercase characters, begin the installation by entering:

   ```
   sh install.sh.
   ```

   If all the files are in uppercase characters, begin the installation by entering:

   ```
   sh INSTALL.SH
   ```

6. The installation procedure lists the available platform choices. Enter the number that corresponds to the installation's target platform.

   Note: If you are installing the WebLogic Enterprise 5.1 software on a Solaris 2.6 system or a Solaris 7 system, the installation procedure displays a prompt asking you to choose the version of WebLogic Enterprise 5.1 that is compatible with the applications and software components you intend to use on the Solaris system. The prompt offers the following choices:

   - **Standard Mode**—this version of WebLogic Enterprise 5.1 has been built with the Sun Workshop 5.0 C++ compiler in Standard Mode. Choose this if your WebLogic Enterprise applications need to be compatible with other applications and components that have been built with the Sun Workshop 5.0 C++ compiler in Standard Mode.
   - **Compatibility Mode**—this version of WebLogic Enterprise 5.1 has been built with the Sun Workshop 5.0 C++ compiler in Compatibility Mode. Choose this if your WebLogic Enterprise applications need to be compatible with WebLogic Enterprise 4.2 or other applications and components that have been built with the Sun Workshop 4.2 C++ compiler, or with the 5.0 compiler in Compatibility Mode. (Refer to the Sun Workshop 5.0 C++ compiler documentation for details on the use and support of compatibility mode.)

For example, the prompts during the WebLogic Enterprise installation on Solaris are:

```
3)      Sun Solaris v2.6 (Standard Mode)
4)      Sun Solaris v2.6 (Compatibility Mode)
```

Or:

```
5)      Sun Solaris 7 (Standard Mode)
6)      Sun Solaris 7 (Compatibility Mode)
```

Note: If you install the WebLogic Enterprise software on a Solaris system, there is a way to tell which version of WebLogic Enterprise (Standard Mode or Compatibility Mode) was installed. The `/udataobj` directory under the installed WebLogic Enterprise directory will contain either a `CompatibilityMode.txt` file or a `StandardMode.txt` file. The file has one line that states: `You have installed components for Sun Solaris v<OS-version> <mode-type>`.

7. The remaining prompts in this chapter show a sample WebLogic Enterprise 5.1 installation on a Solaris 2.6 system. For example, a confirmation prompt is displayed. (In this example, assume we indicated in the previous step that we want to install the Solaris 2.6 Compatibility Mode version.)

   ```
   ** You have chosen to install software for **

   BEA WebLogic Enterprise Release 5.1

   This directory contains the BEA WLE Installation Software for
   Sun Solaris v2.6 on Sun SPARC (Compatibility Mode).

   Is this correct? [y,n,q]:
   ```

8. Enter `y` to accept the selection; or enter `n` to reject the selection and return to the list of platforms; or enter `q` to quit the installation.

9. An informational messages and the initial component selection menu are displayed:

   ```
   To terminate the installation at any time
   press the interrupt key,
   typically <del>, <break>, or <ctrl+c>.

   The following components are available:

     1     servers         BEA WebLogic Enterprise Servers
     2     clients         BEA WebLogic Enterprise Clients
   ```

```
  3     admcon          BEA Administration Console
Select the one you wish to install [?,??,q]:
```

The server and client components have packages that you can select for a more specific installation. Enter the number 1 to display all the WebLogic Enterprise server packages; or enter 2 to display all the WebLogic Enterprise client packages; or enter 3 to display the Administration Console component; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter `q` to quit the installation.

10. **If you entered the number 1** in the component selection menu to view the list of WebLogic Enterprise server packages, the following menu is displayed:

```
The following packages are available:
  1     wletsrv    BEA WebLogic Enterprise Tuxedo Server
  2     wlecsrv    BEA WebLogic Enterprise CORBA C++ Server
  3     wlejsrv    BEA WebLogic Enterprise CORBA Java Server
  4     wlej2ee    BEA WebLogic Enterprise J2EE Server
Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]:
```

Select the server package you want to install. (Although the prompt implies that you could enter different combinations of server packages, you can only enter a single type of server during each installation procedure, **or you can enter `all`**, the default option, to install all packages at once.)

Note: When you select a server package, that server package and its corresponding client packages are installed. The Administration Console component is not installed. If you later want to install the Administration Console on your system, you can run the installation procedure again to select and install the Administration Console.

Note: The BEA Tuxedo server software is always installed as a base component for any of the other WebLogic Enterprise servers. Also, the CORBA Java and J2EE server components are always installed together, even if you only select one of those items.

If instead you entered 2 in the component selection menu to view the list of WebLogic Enterprise client packages, the following menu is displayed:

```
The following packages are available:
  1     wletcli   BEA Tuxedo Client
```

```
  2     wleccli   BEA CORBA C++ Client

  3     wlejcli   BEA CORBA Java Client

  4     wlercli   BEA RMI/EJB Client

Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]:
```

Select the client package you want to install. Or enter `all`, the default option, to install all the client packages.

If instead you entered 3 in the initial component selection menu, the following menu is displayed:

```
The following packages are available:

  1     admcon     BEA Administration Console

Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]:
```

Enter the number `1` or the word `all` if you want to install the Administration Console.

11. The installation procedure displays the name of the component you are installing, and lists copyright information. For example, if you selected 1 in the initial component selection menu, and then selected 3, CORBA Java Servers, the procedure displays the following:

    ```
    BEA WebLogic Enterprise CORBA Java Server
    (sparc) Release 5.1
    Copyright (c) 2000 BEA Systems, Inc.
    All Rights Reserved.
    BEA and WebLogic are trademarks of BEA Systems, Inc.

    SSLplus is a trademark of Certicom Corporation, 2000.
    BSAFE is a trademark of RSA Data Security, Inc., 2000.
    ```

12. Enter the target directory for the selected software. The following prompt is displayed:

    ```
    Directory where WebLogic Enterprise files are to be installed
    [?,q]:
    ```

    For example, you could enter the `/usr/local/wledir` directory.

    Most server components can be installed in any directory whose file system has enough disk space to accommodate them. There may be one or more server components that have to be installed over an existing WebLogic Enterprise server component.

When you enter the directory name, the installation program verifies it by using the following criteria:

- The value entered must be a full directory specification.
- If the directory already exists, it must be writable by the user performing the installation.
- If the directory already exists, it must have its executable permission set for the user performing the installation.
- The name provided for the directory cannot be an existing file.

If the target directory name passes the verification check and does not exist, the installation program creates the directory.

13. The file system for the target directory is checked for available space. For example:

```
Determining if sufficient space is available ...
272989 blocks are required
16118268 blocks are available to /usr/local/wledir

Using /usr/local/wledir as the WebLogic Enterprise base
directory
```

If enough disk space is available, the installation continues. If there is insufficient disk space, the installation returns to the prompt asking for the name of a directory.

14. If you entered `3` or `all` in the initial component selection menu, indicating that the installation would include the Administration Console, you are asked to choose between the following:

- Accepting default locations for files being installed
- Specifying nondefault pathnames for these files

For details on the options, see the section "Selecting Directories for the WebLogic Enterprise Files" on page 1-14.

Press the Enter key to accept the default locations, if desired. If you accept the default locations, the following prompt is displayed. (In this sample, the user entered `/usr/local/wledir` as the target directory.)

```
Creating /usr/local/wledir/udataobj/webgui

Using /usr/local/wledir/udataobj/webgui as the BEA
Administration Console document tree
```

```
Directory where BEA Administration Console java applets are to be
installed (default:
/usr/local/wledir/udataobj/webgui/java) [?,q]:
```

15. Again, you have a choice. If you accept the default, the following prompt is displayed:

    ```
    Creating /usr/local/wledir/udataobj/webgui/java

    Using /usr/local/wledir/udataobj/webgui/java as the BEA
    Administration Console document tree

    Directory where BEA Administration Console CGI programs are to
    be installed (default:
    /usr/local/wledir/udataobj/webgui/cgi-bin) [?,q]:
    ```

    Press the Enter key to accept the default locations, if desired.

16. If you accept the default, the following prompt is displayed:

    ```
    Creating /usr/local/wledir/udataobj/webgui/cgi-bin

    Using /usr/local/wledir/udataobj/webgui/cgi-bin as the BEA
    Administration Console CGI directory

    Web server client prefix for CGI directory.  /cgi-bin is a good
    choice for most web servers. (default: /cgi-bin) [?,q]:
    ```

    Press the Enter key to accept the default locations, if desired.

17. If you accept the default, the following prompt is displayed:

    ```
    Using /cgi-bin as the BEA Administration Console CGI prefix
    ```

18. At this point, the installation program proceeds to install the WebLogic Enterprise files.

19. After the installation of the WebLogic Enterprise files is completed, the following text and prompt is displayed for each server component you have chosen to install:

    ```
    ... finished

    .
    .
    .

    Changing file permissions...
    ... finished

    Processing default license file...
    ... finished
    ```

```
Install tlisten password? [y/n]:
```

20. If you want to specify a `tlisten` password, enter `y`; otherwise, enter `n`. For information about the `tlisten` password and instructions for setting it, see the section "Selecting an Administrative Password" on page 1-17. If you enter `y`, the following prompt is displayed:

    ```
    Please enter the tlisten password:
    ```

21. Enter the `tlisten` password. The following prompt is displayed for each server component that you have chosen to install:

    ```
    Please verify the password:
    ```

22. Enter the `tlisten` password again. The following prompt is displayed:

    ```
    tlistpwd: INFO: Password appended to file
    "/usr/local/wledir/udataobj/tlisten.pw".

    Verifying installation...
    ... Installation successful!

    If your license file is accessible, you may install it now.
    Install license file? [y/n]:
    ```

23. If you want to install the WebLogic Enterprise software license now, enter `y`; otherwise, enter `n` and install the license later. If you enter `y`, the following prompt is displayed:

    ```
    To terminate the license update at any time
    press the interrupt key,
    typically <del>, <break>, or <ctrl+c>.

    Directory containing source license text file [?,q]:
    ```

    Warning: Pressing one of the interrupt keys mentioned in the prompt terminates the installation, not just the license update.

24. Insert the license diskette, which is shipped in the WebLogic Enterprise software box, in the diskette reader on your machine, mount the disk (if necessary), copy the `lic.txt` file to a system directory, and enter the location of the `lic.txt` file at the prompt. For example, if you copy the `lic.txt` file to `/usr`, enter `/usr`. The following prompt is displayed:

    ```
    Using /usr/lic.txt to copy license information.

    Updating /usr/local/wledir/udataobj/lic.txt with license
    information.

    Please don't forget to fill out and send in your registration
    card
    ```

25. After the installation is completed, unmount the CD file system and remove the CD from the reader. For platform-specific instructions for unmounting the CD, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

Installing the T-Engine Product License After You Install the WebLogic Enterprise Software

If you elected not to install the T-Engine product license when you installed the WebLogic Enterprise software, you can install the T-Engine license using the BEA License Utility.

Note: Your T-Engine product license is on a 3.5-inch diskette that is either attached to the outside of the WebLogic Enterprise product box, or mailed to you. For general information about licenses, see the section "Checking the WebLogic Enterprise Product Boxes" on page 1-2.

To install the T-Engine license, complete the following steps:

1. Insert the license diskette WebLogic Enterprise in the diskette reader on your machine, mount the disk (if necessary), and copy the `lic.txt` file to a directory of your choice, but not to the `wledir` directory or any of its subdirectories.

2. Change to the `bin` directory where you installed the WebLogic Enterprise software. For example:

   ```
   cd /usr/local/wledir/bin
   ```

3. Enter `sh ./lic.sh`.

   The following prompt is displayed:

   ```
   To terminate the license update at any time
   press the interrupt key,
   typically <del>, <break>, or <ctrl+c>.

   Directory containing source license text file [?,q]:
   ```

4. Enter the name of the directory that contains the `lic.txt` file (for example, `/kits/license`). The following prompt is displayed:

   ```
   Using /kits/license/lic.txt to copy license information.

   Directory where WebLogic Enterprise files are installed. [?,q]:
   ```

5. Enter `/usr/local/wledir` or the name of the directory where you installed the WebLogic Enterprise software. The following prompt is displayed:

   ```
   Updating /usr/local/wledir/udataobj/lic.txt with license
   information.
   ```

If you Installed WebLogic Enterprise on Solaris

If you installed the WebLogic Enterprise software on a Solaris system, there is a way to tell which version of WebLogic Enterprise (Standard Mode or Compatibility Mode) was installed. The `/udataobj` directory under the installed WebLogic Enterprise directory contains either a `CompatibilityMode.txt` file or a `StandardMode.txt` file. The file has one line that states: `You have installed components for Sun Solaris v<OS-version> <mode-type>`.

Running Simpapp to Verify the WebLogic Enterprise CORBA C++ Software Installation

To verify that you have successfully installed the WebLogic Enterprise CORBA C++ client and server software, run the `simpapp` application. This "simple application" is a WebLogic Enterprise client/server application that converts strings to uppercase and lowercase letters.

Note: This section assumes you installed all WebLogic Enterprise server components, or one of the CORBA server components. If you installed only the J2EE server component, see the next section, "Running Simpapp to Verify the WebLogic Enterprise CORBA Java Software Installation" on page 3-15, for information about running an EJB sample to verify the installation.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software.

To run `simpapp`, complete the following steps:

1. Make sure that the directory in which you installed the WebLogic Enterprise software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, enter the following to set the `TUXDIR` environment variable: `TUXDIR=/usr/local/wledir; export TUXDIR`.

2. Create a directory under `wledir` and copy the content of the `simpapp` directory to it.

Notes: If you installed all WebLogic Enterprise servers or the CORBA C++ server component in the default directory, a C++ `simpapp` directory is located at `usr/local/wledir/samples/corba/simpapp`.

3. Change (`cd`) to the copy directory.

4. To change the permissions on all the files to allow full access, enter:
`chmod 777 *`

5. Ensure that `make` is in your path.

6. To run `simpapp` automatically, enter `./runme.ksh`. The `simpapp` application runs and prints the following messages:

```
Testing simpapp
     cleaned up
     prepared
     built
     loaded ubb
     booted
     ran
     shutdown
     saved results
  PASSED
```

7. To run `simpapp` manually to observe the processes starting and stopping, do the following:

   a. Enter `KSH`.

   b. Enter `. ./results/setenv.ksh`.

   c. Enter `tmloadcf -y results/ubb`.

   d. Enter `tmboot -y`. The application starts several processes.

   e. Enter `./simple_client`. The prompt `String?` is displayed.

f. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters and displays the results.

g. Enter `tmshutdown -y`. The application shuts down the processes.

8. To restore the directory to its original state, enter:

   a. `. ./results/setenv.ksh`

   b. `make -f makefile.mk clean`

Running Simpapp to Verify the WebLogic Enterprise CORBA Java Software Installation

To verify that you have successfully installed the WebLogic Enterprise CORBA Java client and server software, run the `simpapp_java` application. This "simple application" is a WebLogic Enterprise client/server application that converts strings to uppercase and lowercase letters.

Notes: This section assumes you installed all WebLogic Enterprise server components, or the CORBA Java server components. If you installed only the J2EE server component, see the next section, "Running Simpapp to Verify the WebLogic Enterprise CORBA Java Software Installation" on page 3-15, for information about running an EJB sample to verify the installation.

If you have installed the CORBA Java server components, the CORBA C++ components are also automatically installed. Therefore, if running `simpapp_java` as described in this section is successful, it also verifies that the CORBA C++ components were installed correctly.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software. For example, on NT systems, you must first download and install the Java 2 SDK version 1.2.2.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software.

To run `simpapp_java`, complete the following steps:

1. Make sure that the directory in which you installed the WebLogic Enterprise software is set in the environment variable `TUXDIR`. For example, if you installed the software in the default directory, enter the following to set the `TUXDIR` environment variable: `TUXDIR=/usr/local/wledir; export TUXDIR`.

2. Create a directory under `wledir` and copy the content of the `simpapp` directory to it.

Notes: If you installed all WebLogic Enterprise servers or the CORBA Java server component in the default directory, a `simpapp_java` directory is located at `usr/local/wledir/samples/corba/simpapp_java`.

3. Change (`cd`) to the copy directory.

4. To change the permissions on all the files to allow full access, enter:
   `chmod 777 *`

5. Ensure that `make` is in your path.

6. To run `simpapp` automatically, enter `./runme.ksh`. The `simpapp_java` application runs and prints the following messages:

```
Testing simpapp
  cleaned up
  prepared
  built
  loaded ubb
  booted
  ran
  shutdown
  saved results
PASSED
```

7. To run `simpapp_java` manually to observe the processes starting and stopping, do the following:

   a. Enter `KSH`.

   b. Enter `. ./results/setenv.ksh`.

   c. Enter `tmloadcf -y results/ubb`.

   d. Enter `tmboot -y`. The application starts several processes.

   e. Enter `./simple_client`. The prompt `String?` is displayed.

f. Enter a word in lowercase letters. The application converts the word to uppercase and then to lowercase letters and displays the results.

g. Enter `tmshutdown -y`. The application shuts down the processes.

8. To restore the directory to its original state, enter:

   a. `. ./results/setenv.ksh`

   b. `make -f makefile.mk clean`

Running a Basic EJB Sample to Verify the WebLogic Enterprise J2EE Software Installation

If you installed only the WebLogic Enterprise J2EE server component, you can run the stateless session EJB sample provided by the WebLogic Enterprise software to verify the installation.

Before running the sample application, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets" for important information about prerequisite software. For example, on NT systems, you must first download and install the Java 2 SDK version 1.2.2.

This sample demonstrates the usage of a stateless session EJB that uses a simple stock trader application. This sample demonstrates how the client must maintain any persistent state—such as the change in the cash account—across repeated calls to the session EJB. All the logic for the balance is encapsulated in the client, where all the persistence is provided by the container and the logic is maintained in the EJB.

The EJB in this sample provides basic trading methods, such as buying and selling stocks. Because there are no persistent stores involved in this sample, all the stock data are set in the deployment descriptor of the EJB as environment properties. The container supplies the data to the EJB through the JNDI lookup operation.

To build the EJB sample, complete the following steps:

1. Ensure that the directory in which you installed WebLogic Enterprise is set in the environment variable `TUXDIR`. Also make sure to set the `JAVA_HOME` environment variable to the directory path where you installed the Java 2 SDK software. For example:

```
JAVA_HOME =/usr/local/JDK1.2.2
```

2. Make a copy of the `$TUXDIR/samples/j2ee/ejb` directory into a working directory.
3. Change the directory to the working directory.
4. Change the permissions on all the files to give them write-access. For example:

   ```
   prompt>chmod -R +w *
   ```

   Change the permission of the `runme.ksh` file to give it execute permission, as in the following command:

   ```
   prompt>chmod +x runme.ksh
   ```

5. Run the JavaServer version of the sample automatically by entering the `runme` command:

   ```
   prompt>. ./runme.ksh basic statelessSession
   ```

6. A number of messages are displayed, along with information about whether the build procedure was successful. The sample is built, the servers are booted, and the client is run once.

After you have executed the `runme` command, you can run the samples manually if you like.

To run the samples manually:

1. Change the current directory to the `basic/statelessSession` directory.
2. Ensure that your environment is set correctly by entering the following command:

   ```
   prompt>. ./setenv.ksh
   ```

3. Boot the server, run the client, and shut down the server by entering the following commands:

   ```
   prompt>tmboot -y
   prompt>. ./run_client.ksh
   prompt>tmshutdown -y
   ```

To restore the sample application directory to its original state:

1. Change to the work directory.

2. Enter the following command, where `TUXDIR` is the directory in which you installed the WebLogic Enterprise software:

   ```
   prompt>. $TUXDIR/samples/j2ee/ejb/clean.ksh
   ```

For more information about the stateless session EJB sample application, see the *Guide to the EJB Sample Applications* in the WebLogic Enterprise online documentation.

Removing (Uninstalling) the WebLogic Enterprise Software from Your System

To remove the software from your system, use the following procedure. This procedure also removes the WebLogic Enterprise Encryption Package software, if present on your system.

1. Log on as the WebLogic Enterprise administrator or superuser.
2. Make sure that no BEA Tuxedo or WebLogic Enterprise client or server applications are running. Use `tmshutdown` to shut down all WebLogic Enterprise applications.
3. Enter the following command:

   ```
   prompt> rm -rf wledir
   ```

   where `wledir` is the WebLogic Enterprise base directory.

4 WebLogic Enterprise T-Engine Postinstallation Considerations

Now that you have successfully installed the WebLogic Enterprise software, you must set up your machine and parts of the WLE software to prepare for developing or installing your application.

This topic includes the following sections:

- Configuring the WebLogic Enterprise System for Microsoft Windows 2000 and NT 4.0
- Setting Up Your Environment on UNIX Systems
- Editing a UBBCONFIG File
- Verifying IPC Requirements
- Creating the Universal Device List and TLOG
- Starting the tlisten Process on UNIX Systems
- Running buildtms and buildXAJS for WebLogic Enterprise Applications That Use XA Resource Managers
- Using the TYPE Parameter in the UBBCONFIG File

- Internet Browser Requirements

Configuring the WebLogic Enterprise System for Microsoft Windows 2000 and NT 4.0

In addition to the BEA Administration Console, the WebLogic Enterprise system provides a control panel applet that you can use to configure the WebLogic Enterprise machine for Microsoft Windows 2000 and NT 4.0.

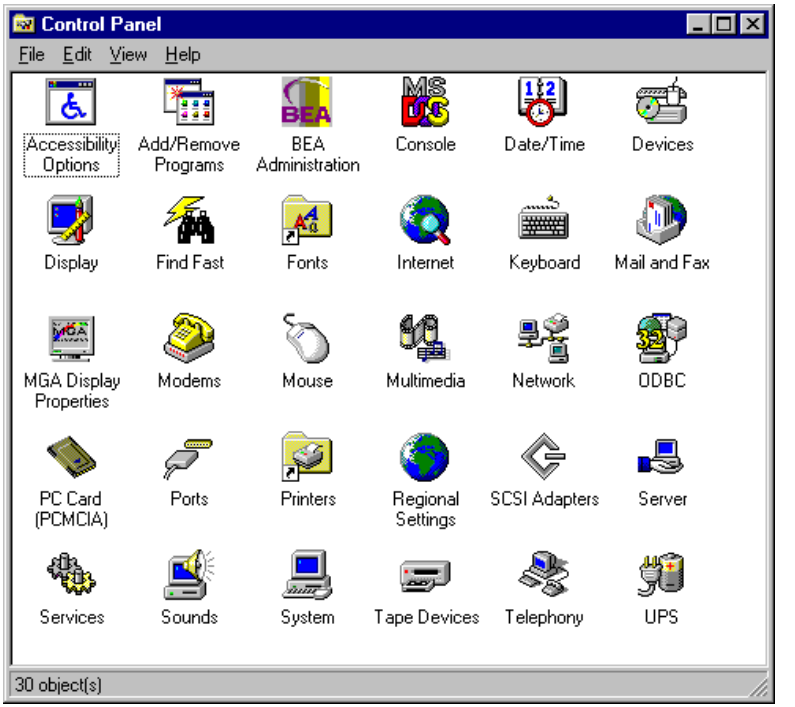
This section describes how to use the applet to do the following:

- Access machines on a network by setting the Machines page.
- Modify environment variables on the Environment page.
- Direct system messages to the Microsoft Windows NT Event Log by setting the Logging page.
- Configure one or more `tlisten` processes to start automatically by setting the Listener page.
- Maximize system performance by tuning the IPC Resources page setting.

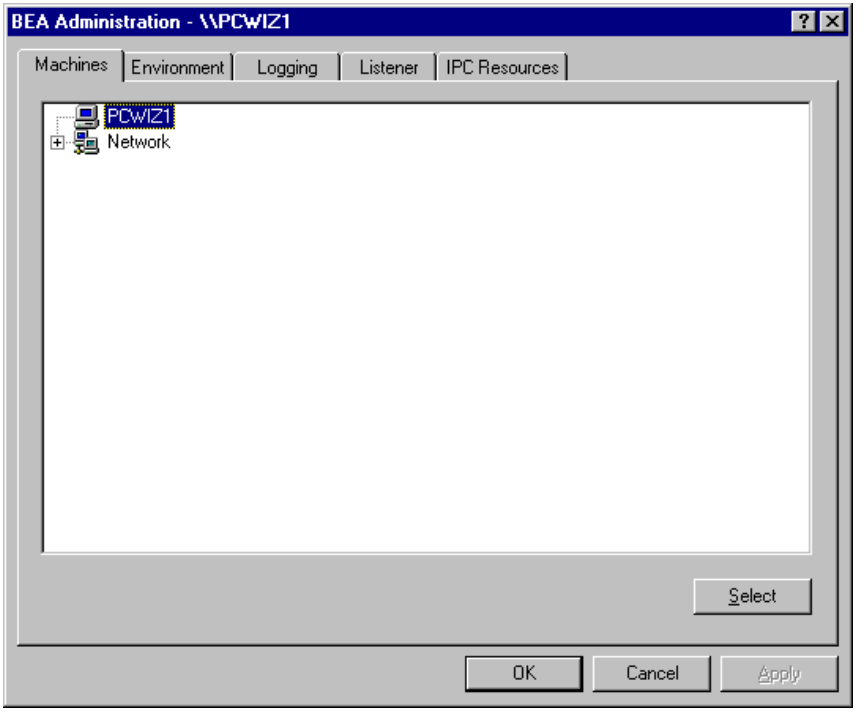
Accessing the Control Panel Applet

To access the control panel applet, proceed as follows:

1. Click Start—>Settings—>Control Panel. The Control Panel is displayed.



2. Click the BEA Administration icon. The BEA Administration screen is displayed.



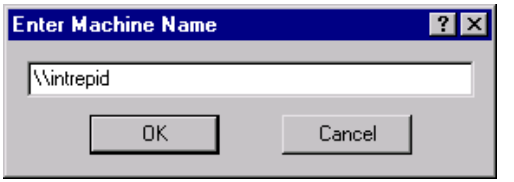
Accessing Machines on a Network

To display the Machines page of the Control Panel, click the Machine tab.

The Machines page enables the WebLogic Enterprise system administrator to access any machine on the Microsoft Windows Network running Microsoft Windows 2000 or NT 4.0, where the administrator has login privileges. The system administrator can then set environment variables remotely; determine the location of BEA WebLogic Enterprise event logging; add, start, or remove `tlisten` services; and tune IPC resources. To access a remote machine, the administrator locates the machine on a network tree.

If you know a machine's name, but not its work group, proceed as follows:

1. Click Select. The Enter Machine Name screen is displayed.



2. Enter the name of the remote machine on the Enter Machine Name window and click OK.

All subsequent actions on other folders in the control panel applet take place on the selected machine.

Modifying Environment Variables

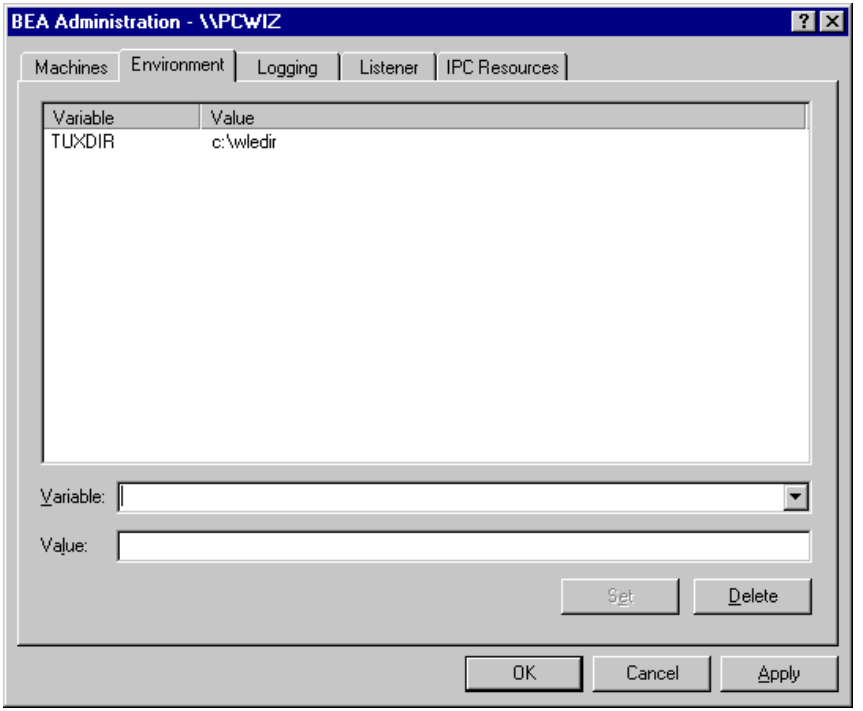
To display the Environment page of the Control Panel, click the Environment tab.

Modifying WebLogic Enterprise environment variables is almost identical to modifying Microsoft Windows 2000 or NT 4.0 environment variables. The Variable field (see Figure 4-1) contains a list of the most commonly used WebLogic Enterprise environment variables.

To modify the variables:

1. To add or edit a variable, select the variable, enter its value in the Value field, and click Set.
2. To delete a variable, select the variable you want to delete, and click Delete.
3. Click OK or Apply to save any changes.

Figure 4-1 WebLogic Enterprise Software for Microsoft Windows 2000 or NT 4.0 Environment Control Panel

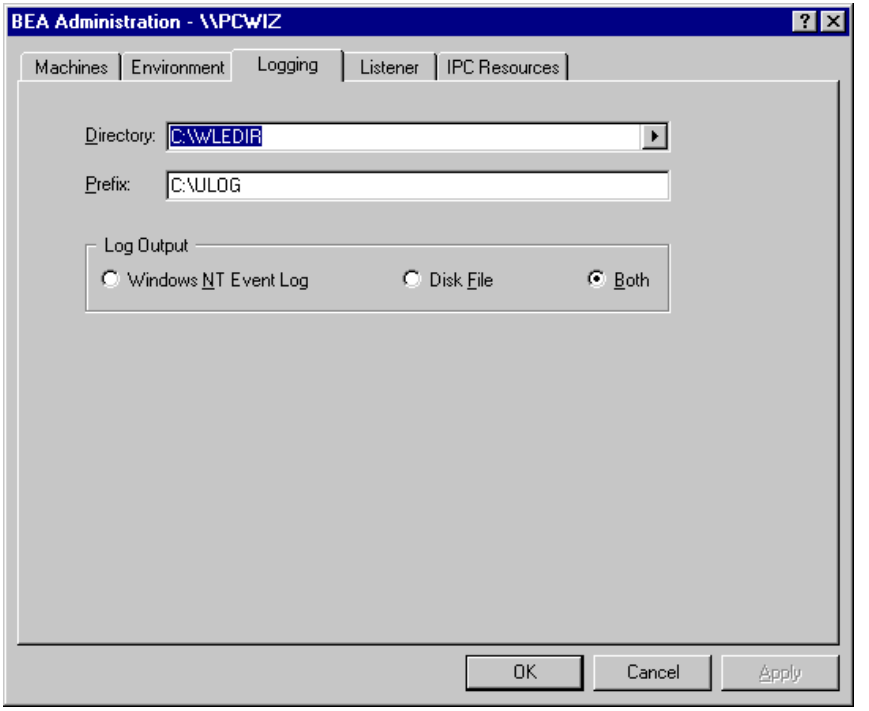


Directing WebLogic Enterprise Messages to the Windows Event Log

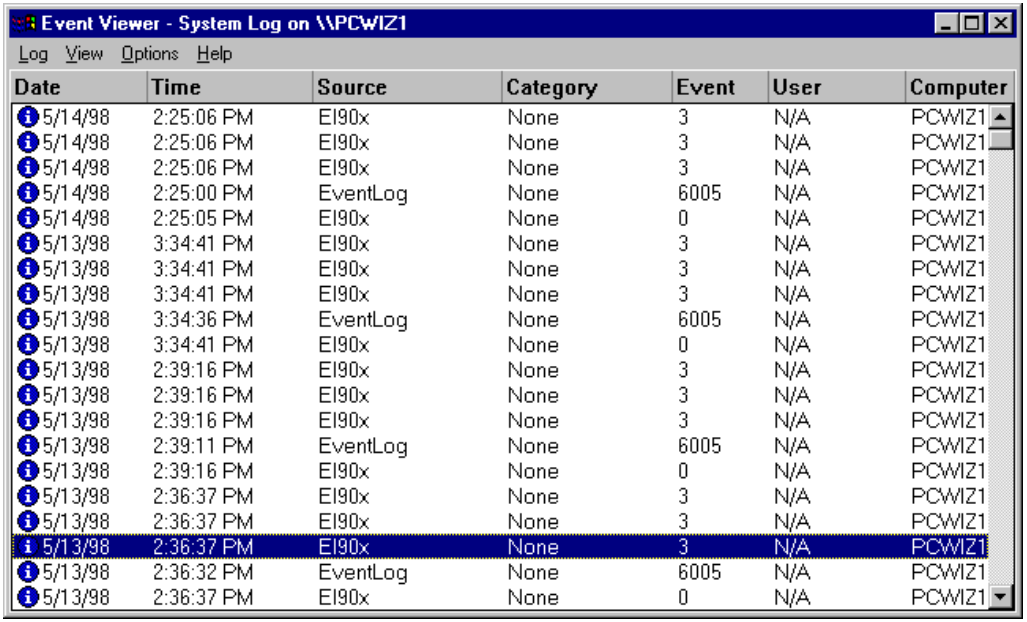
To display the Logging page (Figure 4-2) of the Control Panel, click the Logging tab.

You can set the Logging page to direct WebLogic Enterprise system messages to the Event Log for Windows 2000 or NT 4.0. You can select the Logging option or the traditional user log (Disk File), or both. If you want traditional user log (`ULOG`) messages, select the directory into which `ULOG` messages will be written, as well as the prefix for the filename. The default prefix is `ULOG`, and the default filename is `ULOG.<mmddyy>`.

Figure 4-2 WebLogic Enterprise Software for Microsoft Windows NT Logging Control Panel



To view Event Log entries, click Start—>Programs—>Administrative Tools—>Event Viewer. The Event Viewer window is displayed.



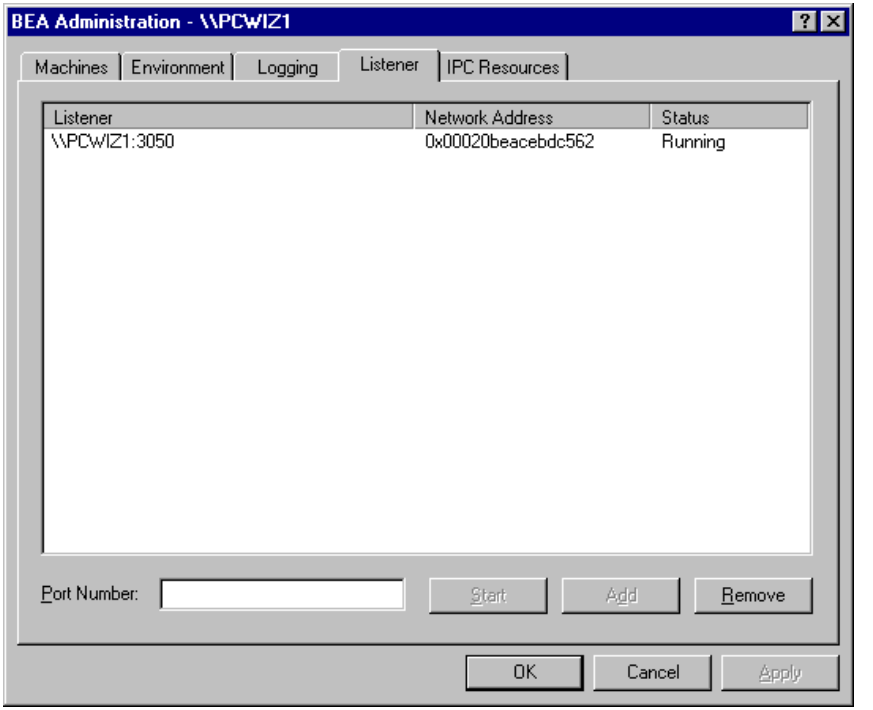
Configuring tlisten Processes to Start Automatically

To display the Listener page (Figure 4-3) of the Control Panel, click the Listener tab.

You can configure one or more `tlisten` processes to start automatically when you boot your machine. To configure `tlisten` processes, proceed as follows:

1. On the Listener page, enter a port number in the Port Number field and click Add to add the service to the list.
2. After you click OK or Apply and reopen the control panel, you can start or stop `tlisten` services from the Listener page (see Figure 4-3). You can also use the Microsoft Windows NT control panel to start or stop a `tlisten` service or to configure the service to start automatically.

Figure 4-3 WebLogic Enterprise Software for Microsoft Windows NT Listener Control Panel



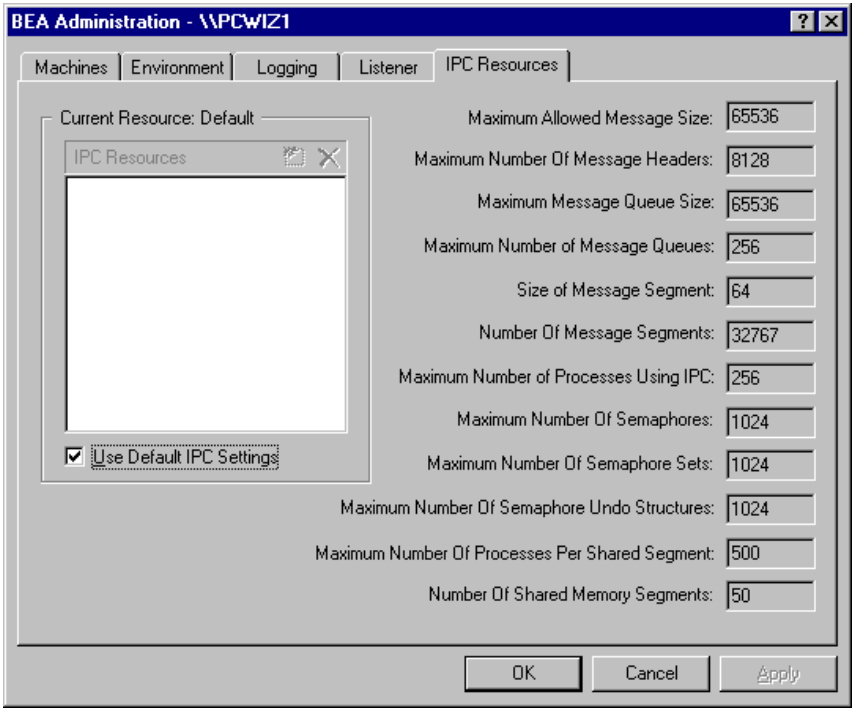
You can use the `tlisten` process to perform administrative actions in a server application across multiple machines. You must start the `tlisten` process on each machine before running the server application. Generally, you need one `tlisten` process for each server application running on the machine.

Maximizing System Performance

To display the IPC Resources page (Figure 4-4) of the Control Panel, click the IPC Resources tab.

The WebLogic Enterprise software for Microsoft Windows 2000 and NT 4.0 systems provides you with BEA Tuxedo IPC Helper (TUXIPC), an interprocess communication subsystem, that is installed with the product. On most machines, IPC Helper runs as installed; however, you can use the IPC Resources page of the control panel applet to tune the TUXIPC subsystem and maximize performance.

Figure 4-4 WebLogic Enterprise Software for Microsoft Windows 2000 and NT 4.0 IPC Resources Control Panel



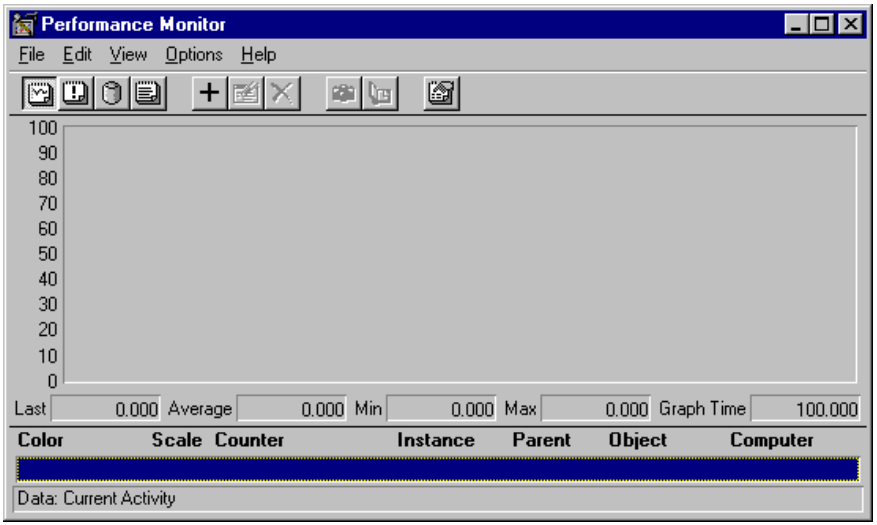
With the IPC Resources control panel, you can set a variety of IPC resources. To define IPC settings for your WebLogic Enterprise machine, proceed as follows:

1. In the Current Resource Default box, click the Use Default IPC Settings check box to clear it.
2. Click the insert box.
3. Enter the name of your machine and press Enter.
4. Click the fields next to the IPC resources you want to set, enter the desired values, and click Apply. Clicking Apply saves the changes in the Registry Table. You must then stop and then restart the Tuxedo IPC Helper for the changes to take effect.
5. Click OK to close the Control Panel.

You can view the performance of a running WebLogic Enterprise server application on the Windows 2000 or NT 4.0 Performance Monitor. An example is shown in Figure 4-5.

For example, to start the Performance Monitor on an NT 4.0 system, click Start—>Programs—>Administration Tools—>Performance Monitor on the NT taskbar. The Performance Monitor screen is displayed.

Figure 4-5 WebLogic Enterprise Software for Microsoft Windows NT Performance Monitor



Setting Up Your Environment on UNIX Systems

On a UNIX system, before you can invoke WebLogic Enterprise system commands, you need to set several environment variables. The Bourne shell script `wle.env`, located in the base directory you specified at installation time, serves as a model for setting these variables.

The following examples assume that you are using the Bourne shell:

- `TUXDIR` contains the full pathname of the directory in which you installed the WebLogic Enterprise software. For example, if you installed the WebLogic Enterprise software in `/var/opt/WLEDIR`, enter the following:

```
TUXDIR=/var/opt/WLEDIR; export TUXDIR
```

- PATH is the search path for commands. Include $TUXDIR/bin in your path. For example:

  ```
  PATH=$PATH:$TUXDIR/bin; export PATH
  ```

- LD_LIBRARY_PATH (on Solaris systems), SHLIB_PATH (on HP-UX systems), and LIBPATH (on IBM AIX systems) name the search path for dynamic shared libraries. These environment variables are needed only on systems that support dynamic shared libraries. Append $TUXDIR/lib to your existing library path. For example, on Solaris systems, set the path variable as follows:

  ```
  LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$TUXDIR/lib; export
  LD_LIBRARY_PATH
  ```

- TUXCONFIG contains the full pathname of the binary configuration file of a specific WebLogic Enterprise server application. Several WebLogic Enterprise system commands require TUXCONFIG to be set appropriately. For example, if your application's binary configuration file is located in /var/opt/wleapp1/tuxconfig, set and export TUXCONFIG as follows:

  ```
  TUXCONFIG=/var/opt/wleapp1/tuxconfig; export TUXCONFIG
  ```

Editing a UBBCONFIG File

Each WebLogic Enterprise machine has a configuration file, commonly called the UBBCONFIG file, which specifies the system parameters that are dependent on the installation. Typically, the configuration file has a name that begins with ubb and ends with something mnemonic, such as ubbsimple. Usually, you must edit this file before you can boot the application.

As an example, Listing 4-1 shows the configuration file from the University sample applications. This file, Ubb_b_nt, is delivered with the WebLogic Enterprise software and is located in WLEDIR/samples/corba/university (for UNIX systems) or WLEDIR\samples\corba\university (for Microsoft Windows systems).

To edit the configuration file for your application, replace the strings provided for the following values:

```
IPCKEY
<machine_name>
APPDIR
TUXCONFIG
TUXDIR
```

These values are highlighted as **boldface** text in Listing 4-1, "University Samples UBBCONFIG File," on page 4-15. The values you need to provide are as follows:

`IPCKEY`
: A numeric key that identifies the shared memory segment where the structures used by your application are located. The value must be greater than 32768 and less than 262143.

`machine_name`
: The node name of the machine. To obtain the node name on a UNIX system, enter the `uname -n` command. If you are using a Microsoft Windows NT system and you do not know the node name of your machine, contact your system administrator. In the University sample application shown in Listing 4-1, "University Samples UBBCONFIG File," on page 4-15, the machine name is SRV.

`APPDIR = string_value`
: `APPDIR` refers to directories in which application and administrative servers will be booted. The `string_value` is the absolute pathname of that directory, optionally followed by a colon-separated list of other directory pathnames, on the machine being defined.

`TUXCONFIG = string_value`
: `TUXCONFIG` is the binary version of the `UBBCONFIG` file, produced by `tmloadcf`(1). The `string_value` is the absolute pathname of the file or device of the `TUXCONFIG` file.

`TUXDIR = string_value`
: Names the base directory of the WebLogic Enterprise software. It must be an absolute pathname.

If you need to look up other values when editing your configuration file, the complete syntax can be found on the `ubbconfig`(5) reference page in the *BEA Tuxedo Reference* that is included in the WebLogic Enterprise online documentation.

Note: The configuration file must be edited before you use the `tmloadcf`(1) command to verify the IPC requirements; otherwise, the `tmloadcf`(1) command fails with syntax errors. For instructions on how to determine IPC requirements, see the section "Verifying IPC Requirements" on page 4-17.

Listing 4-1 University Samples UBBCONFIG File

```
#---------------------------------------------------------------
#
# ubb_b.nt
#
# NT template configuration file for the university sample
# application
#
# Also, check that the value of TUXDIR is correct.
# (this file contains typical values)
#
# For more information on the contents of this file, refer to the
# document "Administration Guide"
#
# BEA Systems Inc. sample code
#
#---------------------------------------------------------------
*RESOURCES
    IPCKEY    55432
    DOMAINID  university
    MASTER    SITE1
    MODEL     SHM
    LDBAL     N
#---------------------------------------------------------------
*MACHINES
#   Specify the name of your server machine
#
    SRV
        LMID = SITE1
#   Pathname of your copy of this sample application.
#   Must match "APPDIR" in "setenv.cmd"
#
    "APPDIR = d:\wlework\checkin\basic"
#   Pathname of the tuxconfig file.
#   Must match "TUXCONFIG" in "setenv.cmd"
#
    TUXCONFIG = "d:\wlework\checkin\basic\resultsb\tuxconfig"
#   Pathname of the WebLogic Enterprise installation.
#   Must match "TUXDIR" in "setenv.cmd"
#
```

```
    TUXDIR = "d:\wledir"
    MAXWSCLIENTS = 10
#------------------------------------------------------------------
*GROUPS
    SYS_GRP
        LMID      = SITE1
        GRPNO     = 1
    ORA_GRP
        LMID      = SITE1
        GRPNO     = 2
#------------------------------------------------------------------
*SERVERS
    DEFAULT:
        RESTART = Y
        MAXGEN = 5
   # Start the Tuxedo System Event Broker. This event broker must
   # be started before any servers providing the NameManager Service
   #
    TMSYSEVT
        SRVGRP = SYS_GRP
        SRVID  = 1
    # TMFFNAME is a BEA WebLogic Enterprise provided server that
    # runs the
    # object-transactional management services. This includes the
    # NameManager and FactoryFinder services.
    # The NameManager service is a BEA WebLogic Enterprise-specific
    # service that maintains a mapping of application-supplied
    # names to object references.
    # Start the NameManager Service (-N option). This name manager
    # is being started as a Master (-M option).
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 2
        CLOPT  = "-A -- -N -M"
    # Start a slave NameManager Service
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 2
        CLOPT  = "-A -- -N"
    # Start the FactoryFinder (-F) service
    #
    TMFFNAME
        SRVGRP = SYS_GRP
        SRVID  = 3
        CLOPT  = "-A -- -F"
    # Start the IR Server
    #
```

```
    TMIFRSVR
        SRVGRP = SYS_GRP
        SRVID = 5
    # Start the university server
    #
    univb_server
        SRVGRP = ORA_GRP
        SRVID  = 2
        RESTART = N
    # Start the listener for IIOP clients
    #
    # Specify the host name of your server machine as
    # well as the port. A typical port number is 2500
    #
    ISL
        SRVGRP = SYS_GRP
        SRVID  = 6
        CLOPT  = "-A -- -n //SRV:2500"
#--------------------------------------------------------------------
*SERVICES
#--------------------------------------------------------------------
```

Verifying IPC Requirements

The WebLogic Enterprise system uses Interprocess Communications (IPC) resources heavily. On many platforms, the default values for the parameters that control the size and quantity of the various IPC resources are below the minimums needed to run even a modest WebLogic Enterprise system application. Therefore, you may need to reset some of the parameters. After editing your configuration file, the next step is to determine whether the IPC resources suffice for the application.

To do this, enter the `tmloadcf`(1) command, specifying your edited configuration file as input:

```
tmloadcf -c ubbconfig
```

An example of the result for the University samples UBBCONFIG file is shown in Listing 4-2.

Listing 4-2 Output Produced by tmloadcf -c

```
Ipc sizing (minimum /T values only)...
                    Fixed Minimums Per Processor
SHMMIN: 1
SHMALL: 1
SEMMAP: SEMMNI
                    Variable Minimums Per Processor
        SEMUME,            A                                SHMMAX
        SEMMNU,            *                                  *
Node    SEMMNS  SEMMSL  SEMMSL  SEMMNI  MSGMNI  MSGMAP  SHMSEG
------  ------  ------  ------  ------  ------  ------  ------
sftuxe     65        8      60   A + 1      28      56     403k

where 1 <= A <= 8.

The number of expected application clients per processor should be
added to each MSGMNI value.
```

This output indicates that to run the University sample application, your system must have SEMUME, SEMMNU, and SEMMNS set to no less than 65. SEMMSL must be at least 8, and SEMMNI and SEMMAP must be at least 4 (assuming A is 3). MSGMNI must be at least 28, and MSGMAP must be at least 56. Finally, the product of SHMMAX and SHMSEG must be at least 403 KB.

The IPC values are dependent on the client or server application, and the numbers in this example reflect a very small configuration. If other client or server applications that use IPC resources are running on the same machine with a WebLogic Enterprise client or server application, the requirements of both applications must be satisfied. Also, every machine participating in an application must have sufficient IPC resources available.

If the current IPC resources are inadequate, you must increase the values of the associated IPC parameters. Additional information is available at these locations:

- For instructions on determining and changing the current IPC values for your platform, see the section “Tuning Parameters” for your platform in Chapter 6, “WebLogic Enterprise T-Engine Platform Data Sheets.”

- For a description of parameters in the UBBCONFIG file that affect IPC resources, refer to the section "Defining IPC Limits" in *Creating a Configuration File* in the WebLogic Enterprise online documentation.

Creating the Universal Device List and TLOG

The Universal Device List (UDL) is like a map of the WebLogic Enterprise file system. It is loaded into shared memory when the application is booted. The TLOG refers to a log in which information on transactions is kept until the transaction is completed.

Creating the UDL

To create the UDL, enter the following command before the application has been booted:

```
tmadmin -c
crdl -z config -b blocks
```

where -z *config* specifies the full pathname for the device where the UDL should be created, and -b blocks specifies the number of blocks to be allocated on the device. The value of *config* should match the value of the TLOGDEVICE parameter in the MACHINES section of the UBBCONFIG file.

Note: In general, the value that you supply for blocks should not be less than the value for TLOGSIZE. For example, if TLOGSIZE is specified as 200 blocks, specifying -b 500 would not cause a degradation.

Creating the TLOG

Several parameters in the MACHINES section of the UBBCONFIG file are used to define a global transaction log (TLOG). The WebLogic Enterprise system administrator must manually create the device list entry for the TLOGDEVICE on each machine where a TLOG is needed. The device list entry can be created either before or after TUXCONFIG has been loaded, but it must be done before the machine is booted.

To create an entry in the UDL for the TLOGDEVICE, create the UDL as described previously on each machine that will be involved with global transactions. If the TLOGDEVICE is mirrored between two machines, it is not necessary to create an entry on the paired machine. The Bulletin Board Liaison (BBL) then initializes and opens the TLOG during the boot process.

Starting the tlisten Process on UNIX Systems

When used in a distributed environment, the WebLogic Enterprise system requires the capability to start, shut down, and administer processes on remote machines running WebLogic Enterprise servers. The tlisten(1) process provides this facility. Once tlisten is running, tmboot(1), for example, can start WebLogic Enterprise servers on remote machines.

The tlisten process is a generic listener process that operates with either of the two network interfaces: Sockets or TLI. It runs as a daemon process, and it can be started in several ways, as follows:

- By the UNIX system administrator as part of a UNIX initialization (boot) script
- By the WebLogic Enterprise system administrator as a cron job
- By the WebLogic Enterprise system administrator starting tlisten manually from the command line

In all cases, the same basic invocation syntax is used:

```
TUXDIR=WLEDIR; export TUXDIR
LD_LIBRARY_PATH=libpath:$LD_LIBRARY_PATH; export LD_LIBRARY_PATH
$TUXDIR/bin/tlisten -d devname -l nlsaddr -u appuid
```

Note: If your machine uses an environment variable other than `LD_LIBRARY_PATH` for the shared library path, specify that variable, instead.

The `-l` option is required. The `-d` option is not required. The value for `-d` represents the network device. The correct values for various platforms are shown in Table 4-1.

Table 4-1 Network Devices for tlisten

Platform	Device Name
Compaq Tru64 UNIX 4.0f	`/dev/streams/xtiso/tcp`
HP-UX 11.00	`/dev/null`
IBM AIX 4.3.3	`/dev/null`
SCO UnixWare 7.1.1	`/dev/tcp`
Solaris 2.6 and Solaris 7	`/dev/tcp`

The value for `-l` should be the same as that specified for the `NLSADDR` parameter in the `NETWORK` section of the configuration file. For information about determining the value of `NLSADDR`, see the `ubbconfig`(5) or `tlisten`(1) reference page in the *BEA Tuxedo Reference* or *Creating a Configuration File* in the WebLogic Enterprise online documentation.

Use the `-u` *`appuid`* option when the command is part of an installation script run by `root`. The value of *`appuid`* is the `UID` or login name of the WebLogic Enterprise system administrator; the numeric version is the same as the value of the `UID` parameter in the `RESOURCES` section of the configuration file. Therefore, even though the `tlisten` process is started by `root`, it runs with the effective `UID` of the owner of the WebLogic Enterprise installation. If `tlisten` is started by the WebLogic Enterprise system administrator either manually or as a `cron` job, the `-u` option is unnecessary, because the job is already owned by the correct account.

Running buildtms and buildXAJS for WebLogic Enterprise Applications That Use XA Resource Managers

For WebLogic Enterprise applications that use distributed transactions and XA-compliant resource managers, you must use the `buildtms` command to construct a transaction manager server load module. This requirement exists on UNIX and Windows NT systems. When the module has been created, it must reside in `%TUXDIR%\bin` on NT systems, or `$TUXDIR/bin` on UNIX systems.

Note: If you run the CORBA C++ University sample applications, or the WebLogic Enterprise Java Bankapp XA sample application, each sample's makefile creates the TMS load module for you and calls it `tms_ora.exe`. Therefore, running `buildtms` as a separate step is necessary only if you do not plan to run any of these sample applications.

For information about the `buildtms` command with WebLogic Enterprise applications, see the `buildtms`(1) reference page in the *BEA Tuxedo Reference* that is included in the WebLogic Enterprise online documentation.

You also must use the `buildXAJS` command to build an XA resource manager that will be used with a JavaServerXA application group. See *Using the JDBC Drivers* in the WebLogic Enterprise online documentation.

Using the TYPE Parameter in the UBBCONFIG File

The `TYPE` parameter in the `MACHINES` section of the `UBBCONFIG` file specifies the invocation of the XDR (EXternal Data Representation) encode/decode routines when messages are passed between unlike machines. The term *unlike* applies even to

machines of the same type if the compiler on each machine is different. In such a case, give each machine a unique TYPE string to force the message to go through the encode/decode routines.

Internet Browser Requirements

The BEA Application Builder online help requires an Internet browser. When you run the online Help from within Application Builder, Netscape is required. If you open the online Help files directly from a browser, you can use Netscape or Microsoft Internet Explorer.

5 BEA Administration Console Startup

If you elected to install the Administration component, read this topic for important information about starting the BEA Administration Console.

This topic includes the following sections:

- System Requirements
- Setting Up Your Environment
- Starting the BEA Administration Console

System Requirements

This section lists the hardware, operating system resources, and browser you must provide to support the BEA Administration Console.

Platforms Supported

The BEA Administration Console runs on all server platforms that support the BEA WebLogic Enterprise 5.1 T-Engine server software. For a complete list of supported platforms, see the section “Supported Platforms” on page 6-2.

Hardware Requirements

In addition to the hardware and software requirements for installing WebLogic Enterprise client and server software on your particular platform (see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets"), the BEA Administration Console requires a color display device with the following capabilities:

- Resolution: 800 by 600 dpi or more is required; 1024 by 768 dpi or more is recommended.
- Colors: 256 colors or more is recommended.

Operating System Requirements

Given the broad outlines of an application design, you must verify the availability of operating system resources needed to support your application. Operating system resources include:

- System shared resources (IPC), which control the maximum message size and maximum queue length, among other things
- Resources governed by kernel parameters

For information about setting Microsoft Windows NT IPC parameters, see the section "Maximizing System Performance" on page 4-9.

For information about setting UNIX system IPC parameters, see the section "Verifying IPC Requirements" on page 4-17.

For more information about system tuning parameters for a particular platform, see Chapter 6, "WebLogic Enterprise T-Engine Platform Data Sheets."

Browser Requirements

Table 5-1 shows the browsers that are supported for the BEA Administration Console.

Table 5-1 Supported Browsers for the BEA Administration Console

Browsers Supported	Platforms Supported
Netscape 4.6.1 or Netscape 4.7	Microsoft Windows 2000, NT 4.0, Windows 98, Solaris 2.6, Solaris 7
Netscape 4.6.1	Compaq Tru64 Unix 4.0f and IBM AIX 4.3.3
Microsoft Internet Explorer 5.0	Microsoft Windows 2000, NT 4.0, and Windows 98

On all supported UNIX platforms, Netscape 4.6.1 or better is supported if the BEA Administration console is configured for zero-bit encryption. On all supported Windows platforms, Netscape 4.6.1 or better, and Microsoft Internet Explorer 5.0, are supported if the Administration Console is configured for zero-bit encryption. Table 5-1 indicates the browser support if the Administration Console is configured for 40-bit, 56-bit, or 128-bit encryption.

An additional requirement is that all browsers must be running the browser vendor's Java plug-in version 1.1 or later.

The Administration Console encryption level is set in its `webgui.ini` file with the `ENCRYPTBITS` parameter. The `ENCRYPTBITS` parameters can be set to 0, 40, 56, or 128. This parameter specifies the strength of encryption used in communication between the GUI applet and the Administration Console server. The default is 128 bit.

Setting Up Your Environment

To run the BEA Administration Console, you need to set up two servers:

- `tuxwsvr`

A Web server provided with the WebLogic Enterprise system software. (You are not required to use this server; you may, if you prefer, use your own commercial Web server.)

- `wlisten`
  A server required to administer the BEA Administration Console. It should be run on the master machine.

Note: You can use any machine that supports a Java-capable browser for performing WebLogic Enterprise system administration through the BEA Administration Console.

Starting tuxwsvr

To start `tuxwsvr` on UXIX systems, enter:

```
$ tuxwsvr -l //machine:port -i \
$ {TUXDIR}/udataobj/tuxwsvr.ini
```

To start `tuxwsvr` on Microsoft Windows NT systems:

1. Open an MS-DOS window.
2. Enter `tuxwsvr -l//machine:port -i%TUXDIR%\udataobj\tuxwsvr.ini`

During installation, the `tuxwsvr.ini` file is created. Usually, you do not need to edit this file. Under certain circumstances, however, you may want to edit this file. For example, you may decide, after installation, to move your Java files to a nondefault directory. In that case, you would need to edit the pathnames in the initialization file appropriately. For details, see the `tuxwsvr`(1) reference page in the *BEA Tuxedo Reference*.

Starting wlisten

To start `wlisten`, proceed as follows:

1. Before starting `wlisten`, check the `webgui.ini` file (located in `WLEDIR\udataobj\webgui` for Microsoft Windows NT systems and in `WLEDIR/udataobj/webgui` for UNIX systems) to make sure that the default values assigned to the parameters during installation are appropriate. Otherwise, make the appropriate changes.
2. For example, on a machine called popeye, the default port assigned to `wlisten` is 4003. To run `wlisten` with port 6060, edit the NADDR parameter line in the `webgui.ini` file, as follows:

   ```
   NADDR=//popeye:6060
   ```

   For details about other parameters in the `webgui.ini` file, see the `wlisten`(1) reference page in the *BEA Tuxedo Reference*.
3. Start the `wlisten` process:

   ```
   $ wlisten
   ```

Starting the BEA Administration Console

To start the BEA Administration Console, proceed as follows:

1. Start the browser.
2. Enter the following URL:

   ```
   http://<machine_name>:<port>/webguitop.html
   ```

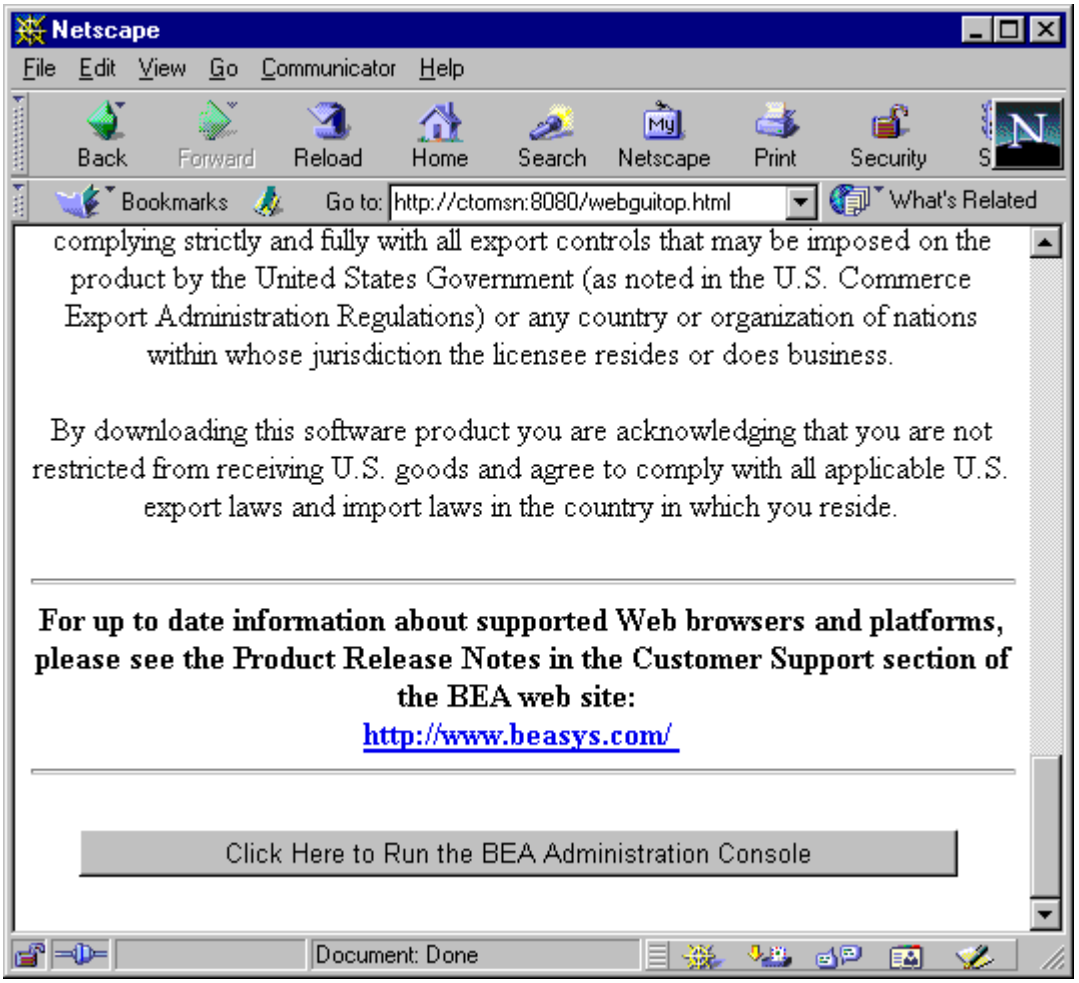
   Use of this URL depends on the following assumptions:

   - You are using `tuxwsvr` with the file `tuxwsvr.ini`.
   - The `webgui.ini` file is in the default location, `WLEDIR/udataobj/webgui`.

   Note: If you are using a commercial browser on the default port (8080), you can use something like the following URL:

   ```
   http://ctomsn:8080/webguitop.html
   ```

   The BEA Administration Console entry page is displayed, including warranty and license notices.



3. To start the BEA Administration Console, click the prompt at the bottom of the screen. The Login window is displayed.

4. Enter your login name and password in the appropriate fields, and click LOGIN. The password must be one of the entries in the `tlisten.pw` file in the `WLEDIR/udataobj` directory. The main window of the BEA Administration Console is displayed.

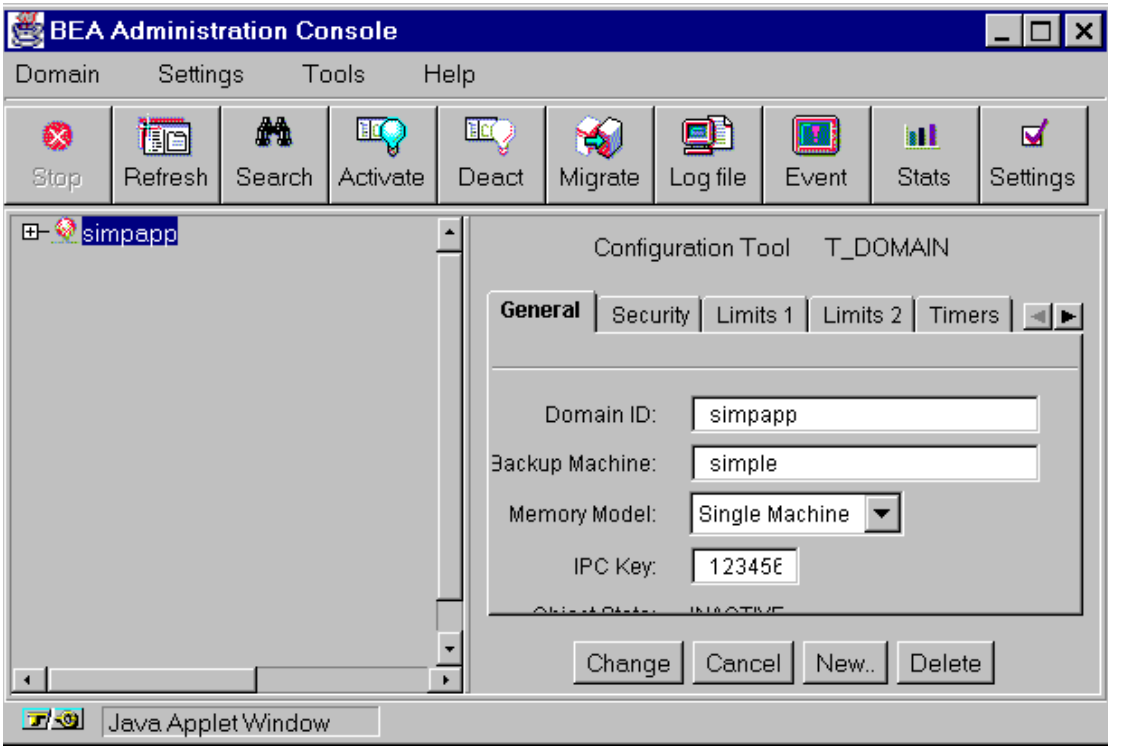


Table 5-2 contains instructions for accessing additional information about the BEA Administration Console main window.

Table 5-2 Accessing Information About the BEA Administration Console Main Window

If . . .	Then . . .
The main window is displayed and you want to start working with the GUI.	See the "Tutorial" section in the BEA Administration Console online help.
The main window is displayed and you want to read a description of it.	See Chapter 2, "A Tour of the Main Window," in the BEA Administration Console Online Help.

The main window does not display and the `Connect Failed` error message is displayed.	1. Enter the `ps` command to verify that the `wlisten` process is running.
	2. If `wlisten` is not running, open the `webgui.ini` file and, in the line "`NADDR=//lcsol1:4003,`" replace the port number (4003) with a valid port number.
	3. Enter `wlisten` again:
	`$ wlisten -i \`
	`WLEDIR/udataobj/webgui/webgui.ini`
	4. Check that the `tuwsvr` process is running at the port as described in the URL.
	5. Verify the password. It must match one of the entries in the `tlisten.pw` file in the `WLEDIR/udataobj` directory.
	6. Return to step 1 above.

5. To exit the BEA Administration Console, click Domain—>Exit.

You may now start setting up your environment for your own application domain.

6 WebLogic Enterprise T-Engine Platform Data Sheets

This appendix contains detailed information about the platforms supported by the WebLogic Enterprise 5.1 T-Engine software.

This topic includes the following sections:

- Supported Platforms
- Compaq Tru64 UNIX on Alpha Systems
- HP-UX Version 11.0 (32-bit) on HP 9000 Series
- IBM AIX 4.3.3 on RS/6000
- Microsoft Windows 2000 and NT 4.0 (SP5) on Intel
- Microsoft Windows 98 and 95 on Intel
- SCO UnixWare 7.1.1
- Sun Microsystems Solaris 2.6 and Solaris 7 (32-Bit) SPARC

Each data sheet includes the following platform-specific information:

- A list of available WebLogic Enterprise packages
- Hardware, software, network, and disk space requirements

- Instructions for mounting and unmounting the WebLogic Enterprise software CD
- Tuning parameters

Supported Platforms

Table 6-1 lists the supported platforms. Data sheets are provided for each platform.

Table 6-1 Supported Platforms

Vendor	Operating System	Release/Version
Compaq	Tru64 UNIX	4.0f (Alpha)
HP	HP-UX	11.00, 32-bit, plus patches B.11.00.B0315, for the HP 9000 Series
IBM	AIX	4.3.3.3 with APARS AIX patches (rev3) installed on the RS/6000
Microsoft	Windows 2000 Windows NT	 4.0 (Intel) plus Service Pack 5 (SP5)
	Windows 98 (clients only)	Windows 98 on Intel
	Windows 95 (clients only)	Service Pack 1 on Intel
SCO	UnixWare	7.1.1 (CORBA C++ and Tuxedo only)
Sun Microsystems	Solaris	Solaris 2.6 SPARC with patch 105591-07 Solaris 7 SPARC (32-bit) with patch 106327-06

Compaq Tru64 UNIX on Alpha Systems

The following sections list requirements for the Compaq Tru64 UNIX platform for Alpha systems.

Available BEA WebLogic Enterprise Version 5.1 Packages

The WebLogic Enterprise 5.1 software components for the Compaq Tru64 UNIX platform for Alpha systems are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA Java servers and J2EE servers
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - CORBA Java clients, over IIOP
  - CORBA C++ clients, native and over IIOP
  - RMI/EJB clients, on IIOP
  - Tuxedo clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- Compaq Alpha processors that support Tru64 UNIX 4.0f
- 64 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-2 lists the Compaq Tru64 UNIX for Alpha systems software requirements.

Table 6-2 Software Requirements

Software Requirements	Compaq Tru64 UNIX for Alpha Systems
C/C++ compilers	Digital C Compiler 5.9-005 Digital C++ Compiler 6.1-029 These compilers are required only for the WebLogic Enterprise development environment
Tools for the Administration desktop	Netscape 4.6.1 is needed for the BEA Administration Console Java 2 JRE 1.2.2-3 is needed for the BEA WebLogic EJB Deployer
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2-3 for Tru64 UNIX
Non BEA CORBA Java client	Java 2 SDK 1.2 IDL ORB (run time)
Database for CORBA C++ applications	Oracle 7.3.4 or later

Table 6-2 Software Requirements (Continued)

Software Requirements	Compaq Tru64 UNIX for Alpha Systems
Database for CORBA Java and J2EE applications	Oracle 8.1.5, also known as Oracle 8i
JDBC drivers	8.0.5
SSL certificate authorities	Verisign Netscape
LDAP directory servers	Netscape Enterprise Server

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler and linker.
- BEA Tuxedo users need a C or C++ compiler.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later is supported.
- When the optional WebLogic Enterprise Encryption Package software has been installed:
  - The WebLogic Enterprise 5.1 ISL/ISH supports SSL 3.0 for IIOP connections.

- The WebLogic Enterprise 5.1 CORBA C++, CORBA Java, and RMI clients support SSL 3.0, and SSL connectivity between these clients and the WebLogic Enterprise ISL/ISH has been certified.
- Secure Sockets Layer (SSL) is not supported for Tuxedo client connections to the WebLogic Enterprise (Tuxedo) WSL/WSH. Tuxedo Link Level Encryption is available for encryption of these connections and encryption of connections between machines and domains.
- Although WebLogic Server supports SSL connections from its clients, the WebLogic Enterprise Connectivity feature in WebLogic Server 4.5.1 does not support SSL in the connection pools between WebLogic Server and the WebLogic Enterprise ISL/ISH. However, SSL connectivity is supported between the J-Engine and the T-Engine in WebLogic Enterprise 5.1.

■ To support certificate-based authentication when using SSL, WebLogic Enterprise provides an LDAP-based certificate retrieval mechanism. This has been certified for use with the LDAP Directory server included with Netscape Enterprise Server.

Network Requirements

TCP/IP, using the SOCKETS network interface.

Disk Space Requirements

The disk space requirements for installation on Compaq Tru64 UNIX on Alpha systems depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-3 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-3 Compaq Tru64 UNIX for Alpha Systems Disk Space Requirements

Components	Compaq Tru64 UNIX for Alpha Systems
All WebLogic Enterprise servers, all WebLogic Enterprise clients, and the BEA Administration Console server software	87 MB
Servers only	All servers: 69 MB Tuxedo server only: 22 MB CORBA C++ server only: 43 MB CORBA Java server only: 68 MB J2EE server only: 69 MB
Clients only	All clients: 29 MB Tuxedo client only: 8 MB CORBA C++ client only: 20 MB RMI/EJB client only: 6 MB CORBA Java client only: 23 MB
Administration	BEA Administration Console: 12 MB
Encryption Packages, 56-bit or 128-bit	2 MB for LLE only on Tuxedo server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

Mounting a CD requires the type `CDFS`. Because `CDFS` is a configurable kernel option, the following line must exist in the system configuration file:

```
options CDFS
```

If the system configuration file does not contain this line, modify the file and then rebuild the kernel.

To mount a CD, enter the following commands:

```
su
mkdir /cdrom
/usr/sbin/mount -r -t cdfs -o noversion /dev/rz unit#c /cdrom
```

where `unit#` is the unit number of your CD drive.

In almost all cases, the unit number of the CD drive on a new system is 4 (that is, `/dev/rz4c`). However, to ensure that you have the correct unit number of the drive, enter the following:

```
su
file /dev/rrz*c
```

The output identifies the CD drive as an RRD disk. The unit number of the drive is in the left column. For example:

```
/dev/rrz4c: character special (8/4098) SCSI #0 RRD43 disk #32 (SCSI
ID #4)
```

To unmount the CD, enter the following command:

```
umount /cdrom
```

where `cdrom` is the mounting point.

Tuning Parameters

You probably need to reconfigure the Tru64 UNIX kernel before running WebLogic Enterprise software, because the default values of some tuning parameters are too low.

To adjust the tuning parameters, proceed as follows:

1. Determine whether the current values are adequate.

   For instructions about determining whether the current tuning parameter values are adequate, refer to "Verifying IPC Requirements" on page 5-17.

2. Reset the tuning parameters as necessary.

   For instructions about reconfiguring, rebuilding, and rebooting, see the following documentation from Compaq: the `doconfig(8)` man page and the BEA WebLogic Enterprise *System Tuning and Performance Management* manual.

Table 6-4 shows the default settings for the parameters and the settings used for the University sample applications. Use these settings as a starting point; however, your applications may require different settings.

Note: The parameters currently set on your system are located in `/sys/conf/<systemname>`. To display the parameters, log in as `root` and enter `/usr/bin/x11/dxkerneltuner` at the command prompt.

Table 6-4 University Sample Applications Default Settings

Compaq Tru64 UNIX Name	Traditional Name	Default Setting	Setting for University Sample Applications
semmns	SEMMNS	60	(SEMMNI*2)
semmni	SEMMNI	10	16
semmsl	SEMMSL	25	25
semume	SEMUME	10	10
semopm		10	10
semvmx		32767	32767
semaem		16384	16384
msgmni	MSGMNI	50	84
msgmax	MSGMAX	8192	8192
msgmnb	MSGMNB	16384	16384
msgtql	MSGTQL	40	40

Table 6-4 University Sample Applications Default Settings (Continued)

Compaq Tru64 UNIX Name	Traditional Name	Default Setting	Setting for University Sample Applications
maxusers	maxusers	varies	32
maxproc	NPROC	20+8*maxusers	32-72 per user
maxuprc	MAXUP	64	(NPROC * 9) / 10

To determine the current value of a tunable parameter, examine the kernel configuration file located in the `/sys/conf` directory. This file typically has the same name as the node (machine) name.

To change the value of a tunable parameter, follow the instructions on the `dmconfig` man page.

To specify the value of a parameter that was previously unspecified, add a line such as the following to the kernel configuration file:

```
semmni 256
```

where `semmni` is the name of the parameter and `256` is its value.

HP-UX Version 11.0 (32-bit) on HP 9000 Series

The following sections list requirements for the HP-UX platform.

WebLogic Enterprise 5.1 Components

The WebLogic Enterprise 5.1 software components for the HP-UX platform are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA Java servers and J2EE servers
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - CORBA Java clients, over IIOP
  - CORBA C++ clients, native and over IIOP
  - RMI/EJB clients, on IIOP
  - Tuxedo clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- HP 9000 Series
- 64 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-5 lists the HP-UX 11.0 (32-bit) software requirements.

Table 6-5 HP-UX 11.0 (32-Bit) Software Requirements

Software Requirements	HP-UX 11.0 (32-Bit)
Operating system	HP-UX 11.0 32-bit plus patches B.11.00.B0315. Java users must apply Java 2 patches, which are available at http://www.unixsolutions.hp.com/products/java/2_60_software_content.html
C compiler	HP C/ANSI compiler A.11.01.00. Required for development only
C++ compiler	HP C++ compiler A.03.13. Required for development only
Tools for the Administration desktop	Netscape 4.72 or later is needed for the BEA Administration Console Java 2 JRE 1.2.2.03 is needed for the BEA WebLogic EJB Deployer
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2.03 for HP-UX 11.00
Non-BEA CORBA Java client	Java 2 SDK 1.2 IDL ORB (run time)

Table 6-5 HP-UX 11.0 (32-Bit) Software Requirements (Continued)

Software Requirements	HP-UX 11.0 (32-Bit)
Database for CORBA C++ applications	Oracle 8.0.5 or later for HP-UX 11.0
Database for CORBA Java and J2EE applications	Oracle 8.0.5 or later for HP-UX 11.0
JDBC drivers	jdbcKona/Oracle 8.0.5 (Type 2), supports XA
SSL certificate authorities	Verisign Netscape
LDAP directory servers	Netscape Enterprise Server

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler.
- BEA Tuxedo users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 40-bit, 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later is supported.
- When the optional WebLogic Enterprise Encryption Package software has been installed:

- The WebLogic Enterprise 5.1 ISL/ISH supports SSL 3.0 for IIOP connections.
- The WebLogic Enterprise 5.1 CORBA C++, CORBA Java, and RMI clients support SSL 3.0, and SSL connectivity between these clients and the WebLogic Enterprise ISL/ISH has been certified.
- SSL is not supported for Tuxedo client connections to the WebLogic Enterprise (Tuxedo) WSL/WSH. Tuxedo Link Level Encryption is available for encryption of these connections and encryption of connections between machines and domains.
- Although WebLogic Server supports SSL connections from its clients, the WebLogic Enterprise Connectivity feature in WLS 4.5.1 does not support SSL in the connection pools between WLS and the WebLogic Enterprise ISL/ISH. However, SSL connectivity is supported between the J-Engine and the T-Engine in WebLogic Enterprise 5.1.

- To support certificate-based authentication when using SSL, WebLogic Enterprise provides an LDAP-based certificate retrieval mechanism. This has been certified for use with the LDAP Directory server included with Netscape Enterprise Server.

Network Requirements

TCP/IP using the SOCKETS network interface

Disk Space Requirements

The disk space requirements for installation on HP-UX 11.0 systems depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-6 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-6 HP-UX 11.0 Disk Space Requirements

Components	HP-UX 11.0 Disk Space
All WebLogic Enterprise servers, all WebLogic Enterprise clients, and the BEA Administration Console server software	89 MB
Servers only	All servers: 71 MB Tuxedo server only: 20 MB CORBA C++ server only: 50 MB CORBA Java server only: 70 MB J2EE server only: 71 MB
Clients only	All clients: 31 MB Tuxedo client only: 7 MB CORBA C++ client only: 22 MB RMI/EJB client only: 6 MB CORBA Java client only: 25 MB
Administration	The server components of the BEA Administration Console: 12 MB
Encryption Packages, 56-bit or 128-bit	2 MB for LLE only on Tuxedo server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

To mount a CD, enter the following commands:

```
su
mkdir /cdrom
mount -F cdfs -o cdcase /dev/dsk/cdrom_device /cdrom
```

where *cdrom_device* is listed in the output of the `ioscan -f -n` command.

To unmount the CD, enter the following command:

```
umount /cdrom
```

where *cdrom* is the mounting point.

Tuning Parameters

You probably need to reconfigure the HP-UX kernel before running BEA WebLogic Enterprise software because the default values of some tuning parameters are too low.

To adjust the tuning parameters, proceed as follows:

1. Determine whether the current values are adequate.

   For instructions about determining whether the current tuning parameter values are adequate, refer to "Verifying IPC Requirements" on page 4-17.

2. Reset the tuning parameters as necessary.

   For instructions about reconfiguring HP-UX, see "Setting Up a System" in the *HP-UX System Administration Tasks Manual*.

Table 6-7 lists the default settings for the parameters and the settings used for the University sample applications. Use these settings as a starting point; however, your applications may require different settings.

The parameters currently set on your system are located in `/stand/build/tune.h`.

Table 6-7 University Sample Application Default Settings

HP-UX Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmmax	SHMMAX	67108864	0x40000000
shmseg	SHMSEG	12	32
shmmni	SHMMNI	100	512
semmns	SEMMNS	128	(SEMMNI*2)
semmni	SEMMNI	64	NPROC*5
semmap	SEMMA	semmni+2	1

Table 6-7 University Sample Application Default Settings (Continued)

HP-UX Name	Traditional Name	Default Setting	Setting for University Sample Applications
semmnu	SEMMNU	30	(SEMMNI / 2)
semume	SEMUME	10	64
msgmni	MSGMNI	50	NPROC
msgmap	MSGMAP	2+msgtql	MSGTQL + 2
msgmax	MSGMAX	8192	32768
msgmnb	MSGMNB	16384	65535
msgssz	MSGSSZ	8	128
msgtql	MSGTQL	40	(NPROC * 10)
msgseg	MSGSEG	2048	(MSGTQL * 4)
maxusers	MAXUSERS	32	200
nproc	NPROC	20+8*maxusers	(MAXUSERS * 3) + 64
maxuprc	MAXUPRC	50	(NPROC * 9) / 10
maxfiles	NFILES	60	15 * NPROC + 2048

IBM AIX 4.3.3

The following sections list requirements for the IBM AIX 4.3.3 platform.

Available BEA WebLogic Enterprise Version 5.1 Packages

The WebLogic Enterprise 5.1 software components for the IBM AIX 4.3.3 platform are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA Java servers and J2EE servers
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - CORBA Java clients, over IIOP
  - CORBA C++ clients, native and over IIOP
  - RMI/EJB clients, on IIOP
  - Tuxedo clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- IBM RS/6000
- 64 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-8 lists the IBM AIX 4.3.3 software requirements.

Table 6-8 IBM AIX 4.3.3 Software Requirements

Software Requirements	IBM AIX 4.3.3 Platform
Operating system	4.3.3 with APARS AIX patches (rev3) installed
C/C++ compilers	C++ for AIX Compiler 3.6.4 C++ This compiler is required only for the WebLogic Enterprise development environment
Tools for the Administration desktop	Netscape 4.6.1 or later is needed for the BEA Administration Console Java 2 JRE 1.2.2 is needed for the BEA WebLogic EJB Deployer
Java 2 Software Development Kit (SDK) for the development environment	IBM Developer Kit for AIX, version 1.2.2
Non BEA CORBA Java client	Java 2 SDK 1.2 IDL ORB
Database for CORBA C++ applications and Tuxedo	Oracle 8.0.5 or later; supports XA

Table 6-8 IBM AIX 4.3.3 Software Requirements (Continued)

Software Requirements	IBM AIX 4.3.3 Platform
Database for CORBA Java and J2EE applications	Oracle 8.0.5 or later; supports XA
JDBC drivers	jdbcKona/Oracle 8.0.5 Type 2; supports XA
SSL certificate authorities	Verisign Netscape
LDAP directory servers	Netscape Enterprise Server

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler and linker.
- BEA Tuxedo users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 40-bit, 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later is supported.
- When the optional WebLogic Enterprise Encryption Package software has been installed:
  - The WebLogic Enterprise 5.1 ISL/ISH supports SSL 3.0 for IIOP connections.

- The WebLogic Enterprise 5.1 CORBA C++, CORBA Java, and RMI clients support SSL 3.0, and SSL connectivity between these clients and the WebLogic Enterprise ISL/ISH has been certified.
- Secure Sockets Layer (SSL) is not supported for Tuxedo client connections to the WebLogic Enterprise (Tuxedo) WSL/WSH. Tuxedo Link Level Encryption is available for encryption of these connections and encryption of connections between machines and domains.
- Although WebLogic Server supports SSL connections from its clients, the WebLogic Enterprise Connectivity feature in WLS 4.5.1 does not support SSL in the connection pools between WLS and the WebLogic Enterprise ISL/ISH. However, SSL connectivity is supported between the J-Engine and the T-Engine in WebLogic Enterprise 5.1.

■ To support certificate-based authentication when using SSL, WebLogic Enterprise provides an LDAP-based certificate retrieval mechanism. This has been certified for use with the LDAP Directory server included with Netscape Enterprise Server.

Network Requirements

TCP/IP using the SOCKETS network interface.

Disk Space Requirements

The disk space requirements for installation on an IBM AIX 4.3.3 system depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-9 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-9 IBM AIX 4.3.3 Disk Space Requirements

Components	IBM AIX 4.3.3
All WebLogic Enterprise servers, all WebLogic Enterprise clients, and the BEA Administration Console server software	87 MB
Servers only	All servers: 69 MB Tuxedo server only: 22 MB CORBA C++ server only: 43 MB CORBA Java server only: 68 MB J2EE server only: 69 MB
Clients only	All clients: 29 MB Tuxedo client only: 8 MB CORBA C++ client only: 20 MB RMI/EJB client only: 6 MB CORBA Java client only: 23 MB
Administration	BEA Administration Console: 12 MB
Encryption Packages, 56-bit or 128-bit	2 MB for LLE only on Tuxedo server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

To mount a CD, examine the file `/etc/filesystems` to determine whether there is a standard place in which to mount a CD. If there is, enter the `mount` command and specify the directory named in the `/etc/filesystems` entry.

For example, to mount a CD if `/etc/filesystems` contains an entry that specifies `/cd` as the mount point for CDs, enter:

```
su
/etc/mount /cd
```

If `/etc/filesystems` does not contain a CD entry, enter:

```
su
mkdir /cd
/etc/mount -v cdrfs -r cd_device /cd
```

where *`cd_device`* is the name of the CD device file, typically `/dev/cd0`.

Alternatively, you can use the System Management Interface Tool (SMIT) to perform the mount. To use SMIT, enter:

```
smit mount
```

To unmount the CD, enter the following command:

```
umount /cdrom
```

where *`cdrom`* is the mounting point.

Tuning Parameters

No IPC configuration is required for AIX Release 4.3.4. To change the value of a kernel tuning parameter (`maxuproc` only), do the following:

1. Acquire superuser privileges.
2. Determine the values of all tuning parameters.
3. Change the parameter's value.
4. Reboot the system.

Microsoft Windows 2000 and NT 4.0 (SP5) on Intel

The following sections list requirements for Microsoft Windows 2000 and NT 4.0 (SP5) on the Intel platform.

BEA WebLogic Enterprise Version 5.1 Components

The WebLogic Enterprise 5.1 software components for the Windows 2000 and NT 4.0 platforms are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA Java servers and J2EE servers
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - CORBA Java clients, over IIOP
  - CORBA C++ clients, native and over IIOP
  - RMI/EJB clients, on IIOP
  - Tuxedo clients
  - ActiveX clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- Pentium processor or better
- 64 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-10 lists the Windows 2000 and NT 4.0 SP5 on Intel software requirements.

Table 6-10 Windows 2000 and NT 4.0 SP5 on Intel Software Requirements

Software Requirements	Windows 2000 and NT 4.0 SP5 on Intel
Compilers	Microsoft Visual C++ 6.0, SP2. Microsoft Visual Basic 6.0. This is required only for client systems that run ActiveX client applications. It is not required for C++, Java, and VisiJava client systems or server-only systems.
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2_001. Java Hotspot Server VM 1.0.1 for Windows.
Tools for the Administration desktop	Netscape 4.61, Netscape 4.7, or Microsoft Internet Explorer 5.0 is needed for the BEA Administration Console. JRE 1.2.2 is needed for the BEA WebLogic EJB Deployer.
Non-BEA CORBA Java clients	Java 2 SDK 1.2 IDL ORB (run time).

Table 6-10 Windows 2000 and NT 4.0 SP5 on Intel Software Requirements

Software Requirements	Windows 2000 and NT 4.0 SP5 on Intel
Internet browser for BEA Application Builder Help	Netscape 4.0 or later. This browser is required only for the online Help used in the BEA Application Builder. This graphical user interface is installed on your system if you selected ActiveX Clients.
SSL certificate authorities	Verisign. Netscape.
Database for CORBA C++ applications	Oracle 7.3.4 or 8.1.5 or later on NT 4.0 systems. Oracle 8.0.5 or later on Windows 2000 systems.
Database for CORBA Java and J2EE applications	Oracle 8.1.5, also known as Oracle 8i, or later on NT 4.0 systems. Oracle 8.0.5 or later on Windows 2000 systems.
JDBC drivers	Without XA support: ■ jdbcKona/Oracle 7.3.4 (Type 2) on NT 4.0 systems. ■ jdbcKona/Oracle 8.0.5 (Type 2) on Windows 2000 systems. With XA support: ■ WebLogic Enterprise JDBC/XA for Oracle 8.1.5, also known as Oracle 8i, on both NT and Windows 2000 systems.
SSL certificate authorities	Verisign. Netscape.
LDAP directory server	Netscape Enterprise Server.

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- EJB and RMI do not require C or C++.

- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.
- Java IDL users need a C preprocessor. On NT, Visual C++ is needed.
- JNI users need a C or C++ compiler and linker.
- BEA Tuxedo users need a C or C++ compiler.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 40-bit, 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later, or Microsoft Internet Explorer 5.0, is supported.
- When the optional WebLogic Enterprise Encryption Package software has been installed:
  - The WebLogic Enterprise 5.1 ISL/ISH supports SSL 3.0 for IIOP connections.
  - The WebLogic Enterprise 5.1 CORBA C++, CORBA Java, and RMI clients support SSL 3.0, and SSL connectivity between these clients and the WebLogic Enterprise ISL/ISH has been certified.
  - SSL is not supported for Tuxedo client connections to the WebLogic Enterprise (Tuxedo) WSL/WSH. Tuxedo Link Level Encryption is available for encryption of these connections and encryption of connections between machines and domains.
  - Although WebLogic Server supports SSL connections from its clients, the WebLogic Enterprise Connectivity feature in WLS 4.5.1 does not support SSL in the connection pools between WLS and the WebLogic Enterprise ISL/ISH. However, SSL connectivity is supported between the J-Engine and the T-Engine in WebLogic Enterprise 5.1.
- To support certificate-based authentication when using SSL, WebLogic Enterprise provides an LDAP-based certificate retrieval mechanism. This has been certified for use with the LDAP Directory server included with Netscape Enterprise Server.

Network Requirements

TCP/IP provided by Microsoft Windows NT (32-bit Winsock).

Disk Space Requirements

The disk space requirements for installation on Windows 2000 and NT 4.0 SP4 (Intel) systems depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-11 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-11 Windows 2000 and NT 4.0 SP5 (Intel) Disk Space Requirements

Components	Windows 2000 and NT 4.0 SP5 (Intel) Disk Space
All WebLogic Enterprise servers, all WebLogic Enterprise clients, and the BEA Administration Console server software	83 MB
Servers only	All servers: 54 MB Tuxedo server only: 21MB CORBA C++ server only: 37 MB CORBA Java server only: 53 MB J2EE server only: 54 MB
Clients only	All clients: 42 MB Tuxedo client only: 13 MB CORBA C++ client only: 24 MB RMI/EJB client only: 5 MB ActiveX client only: 13 MB CORBA Java client only: 24 MB
Administration	BEA Administration Console: 11 MB

Table 6-11 Windows 2000 and NT 4.0 SP5 (Intel) Disk Space Requirements

Components	Windows 2000 and NT 4.0 SP5 (Intel) Disk Space
Encryption Packages, 56-bit or 128-bit	1 MB for LLE only on Tuxedo server or client system 3 MB for LLE and SSL

Tuning Parameters

You may need to reconfigure the parameters shown in Figure 4-4, "WebLogic Enterprise Software for Microsoft Windows 2000 and NT 4.0 IPC Resources Control Panel," on page 4-10 before running the WebLogic Enterprise software. For instructions about reconfiguring the parameters, see "Maximizing System Performance" on page 4-9.

Microsoft Windows 98 and 95

The following sections list requirements for the Windows 98 and 95 platforms.

Available BEA WebLogic Enterprise Version 5.1 Packages

Only the WebLogic Enterprise client software components are supported:

- CORBA Java clients, over IIOP
- CORBA C++ clients, native and over IIOP
- RMI/EJB clients, on IIOP
- ActiveX clients

Note: On Windows 95 systems, the ActiveX Client software requires DCOM 1.1 and a patch from Microsoft. For details, see: `http://www.microsoft.com/msdn/downloads/files/40comupd.htm`.

- Tuxedo clients

Hardware Requirements

- Pentium processor or better
- 32 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-12 lists the Microsoft Windows 98 and 95 software requirements.

Table 6-12 Microsoft Windows 98 and 95 Software Requirements

Software Requirements	Microsoft Windows 98 and 95
Operating system	Microsoft Windows 95 plus Service Pack 1, or Microsoft Windows 98.
DCOM	On Windows 95 systems that are used as ActiveX clients, DCOM for Windows 95 version 1.1 is required, plus a patch from Microsoft. For details, see `http://www.microsoft.com/msdn /downloads/files/40comupd.htm.`
Compilers for client development	Microsoft Visual C++ 6.0, SP2. Microsoft Visual Basic 6.0. This is required only for client systems that run ActiveX client applications. It is not required for C++, Java, and VisiJava client systems.
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2_001.

Table 6-12 Microsoft Windows 98 and 95 Software Requirements (Continued)

Software Requirements	Microsoft Windows 98 and 95
Tools for the Administration desktop	The following are for **Windows 98 only**: Netscape 4.61, Netscape 4.7, or Microsoft Internet Explorer 5.0 is needed for the BEA Administration Console. JRE 1.2.2 is needed for the BEA WebLogic EJB Deployer.
Non-BEA CORBA Java clients	Java 2 SDK 1.2 IDL ORB (run time).
Internet browser for BEA Application Builder Help	Netscape 4.0 or later. This browser is required only for the online Help used in the BEA Application Builder. This graphical user interface is installed on your system if you selected ActiveX Clients.
SSL certificate authorities	Verisign. Netscape.
LDAP directory server	Netscape Enterprise Server.

Network Requirements

TCP/IP provided by Microsoft Windows NT (32-bit Winsock).

Disk Space Requirements

The following table lists the Windows 98 and 95 disk space requirements.

Components	Windows 95 or 98 Disk Space
Clients only	All clients: 42 MB Tuxedo client only: 13 MB CORBA C++ client only: 24 MB RMI/EJB client only: 5 MB ActiveX client only: 13 MB CORBA Java client only: 24 MB

SCO UnixWare 7.1.1

The following sections list requirements for the SCO UnixWare 7.1.1 platform. On this platform, only the CORBA C++ and Tuxedo components in WebLogic Enterprise are supported. The WebLogic Enterprise Java components are not supported.

Available BEA WebLogic Enterprise Version 5.1 Packages

The WebLogic Enterprise 5.1 software components for the SCO UnixWare 7.1.1 platform are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - Tuxedo Workstation clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- Pentium processor or better
- 128 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table 6-13 lists the SCO UnixWare 7.1.1 software requirements.

Table 6-13 SCO UnixWare 7.1.1 Software Requirements

Software Requirements	SCO UnixWare 7.1.1
C/C++ compiler	MIPS Pro compilers (C/C++) 7.2.1, with the following patches: SG0002992, SG0002991, SG0003048, SG0003077, SG0003131, and SG0003139. This compiler is required only for the WebLogic Enterprise development environment.
Internet browsers for the BEA Administration Console	Netscape 4.6.1. Netscape 4.7.
Database for CORBA C++ applications	Oracle 8.0.5 or later.
SSL certificate authorities	Verisign. Netscape.
LDAP directory server	Netscape Enterprise Server.

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- BEA Tuxedo users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 40-bit, 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later is supported.

Network Requirements

TCP/IP using the TLI network interface.

Disk Space Requirements

The disk space requirements for installation on a SCO UnixWare 7.1.1 system depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-14 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-14 SCO UnixWare 7.1.1 Disk Space Requirements

Components	SCO UnixWare 7.1.1
All WebLogic Enterprise C++ and Tuxedo servers, all WebLogic Enterprise C++ and Tuxedo clients, and the BEA Administration Console server software	80 MB
Servers only	All servers: 44 MB Tuxedo server only: 22 MB CORBA C++ server only: 43 MB
Clients only	All clients: 21 MB Tuxedo client only: 8 MB CORBA C++ client only: 20 MB
Administration	BEA Administration Console: 12 MB
Encryption Packages, 56-bit or 128-bit	2 MB for LLE only on Tuxedo server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

To mount a CD, execute the following from the command line:

```
su
mkdir /cdrom1
mount -F cdfs -r -o nmconv=m cd-device /cdrom1
```

To determine the value of `cd-device`, execute:

```
devattr cdrom1 bdevice
```

You can also mount a CD from the Desktop environment. From the UnixWare Desktop window, open the Disks-etc Folder Window by double-clicking on the Disks-etc icon. Then, from the Disks-etc window double-click on the cdrom1 icon, which mounts the CD and displays its contents in the `/cdrom1` Folder Window. When you close the `/cdrom1` Folder Window, the CD is automatically unmounted.

UnixWare 7 typically defines `/var/tmp` as an in-memory file system. Because `/var/tmp` is used by the install script to unspool packages from the CD you should set (and export) `TMPDIR` to point to a directory with enough free space to accommodate the unspooling.

To share (export) a CD so that it can be accessed as a shared file system using NFS, execute:

```
su
share -o ro mount-point
```

where `mount-point` is the full pathname of the directory where the CD is mounted. The directory `/cdrom1` is the standard mount point for a CD. After a CD has been shared and mounted, a remote system can access the CD by mounting it as an NFS file system. For example, on another UnixWare system the appropriate commands are:

```
su
mkdir /cdrom1
mount -F nfs server:/cdrom1 /cdrom1
```

where `server` is the node name of the UnixWare system with the directly-connected CD-ROM device.

Tuning Parameters

You may need to reconfigure the UnixWare kernel before running the WebLogic Enterprise system because the default values of some IPC parameters are too low. For instructions about reconfiguring, rebuilding, and rebooting UnixWare, see *UnixWare System Performance Administration* and the `idtune`(1) and `idbuild`(1) entries in a UNIX system reference manual. You may need to increase the parameters listed in Table 6-15.

Table 6-15 SCO UnixWare Tuning Parameters

SCO UnixWare Name	Traditional Name	Default Setting
shmmax	SHMMAX	524288
shmseg	SHMSEG	6
shmmni	SHMMNI	100
semmns	SEMMNS	60
semmni	SEMMNI	10
semmsl	SEMMSL	25
semmap	SEMMA	10
semmnu	SEMMNU	30
semume	SEMUME	10
msgmni	MSGMNI	50
msgmap	MSGMAP	100
msgmax	MSGMAX	2048
msgmnb	MSGMNB	4096
msgssz	MSGSSZ	8
msgtql	MSGTQL	40
msgseg	MSGSEG	1024

Table 6-15 SCO UnixWare Tuning Parameters (Continued)

SCO UnixWare Name	Traditional Name	Default Setting
nproc	NPROC	200
maxup	MAXUP	200

To change the value of a tunable parameter, complete the following procedure.

1. Acquire superuser privileges:

   ```
   su root
   ```

2. Run the `idtune` command to determine the current default value of the tunable parameter to be changed:

   ```
   /etc/conf/bin/idtune -g param
   ```

   The output of `idtune` lists current, default, minimum, and maximum valid values.

3. Change the parameter's value:

   ```
   /etc/conf/bin/idtune param new-value
   ```

4. If `idtune` fails because `new-value` exceeds the maximum allowed value, you must increase the maximum. (The maximum values of some parameters are set unnecessarily low in some releases of UnixWare.) To do this, edit:

   ```
   /etc/conf/mtune.d/type
   ```

   where type is `shm`, `sem`, or `msg`. Change the maximum value (in the last column) to the desired maximum.

5. Rebuild the operating system and reboot:

   ```
   /etc/conf/bin/idbuild -B
               cd /
               shutdown -y -g0 -i6
   ```

6. Execute `idtune` again and supply the desired `new-value`.

7. Run `idbuild` to build a new kernel:

   ```
   /etc/conf/bin/idbuild -B
               cd /
               shutdown -y -g0 -i6
   ```

8. Reboot your system.

Sun Microsystems Solaris 2.6 and Solaris 7 (32-Bit) SPARC

The following sections list requirements for the Sun Microsystems Solaris platform.

Available BEA WebLogic Enterprise Version 5.1 Packages

The WebLogic Enterprise 5.1 software components for the Solaris 2.6 and Solaris 7 (32-bit) platforms are as follows:

- WebLogic Enterprise servers, consisting of:
  - CORBA Java servers and J2EE servers
  - CORBA C++ servers
  - Tuxedo servers (always installed as a base component for any of the other WebLogic Enterprise servers)
- WebLogic Enterprise clients, consisting of:
  - CORBA Java clients, over IIOP
  - CORBA C++ clients, native and over IIOP
  - RMI/EJB clients, on IIOP
  - Tuxedo clients
- WebLogic Enterprise Administration software, consisting of the BEA Administration Console.
- WebLogic Enterprise 56-bit Encryption Packages or 128-bit Encryption Packages software, if you purchased this optional software. The Encryption Packages installation can occur only after you install the core WebLogic Enterprise 5.1 software.

Hardware Requirements

- SPARC
- 64 MB of RAM (minimum)
- Access to a compact disc (CD) reader

Software Requirements

Table lists the Solaris SPARC 2.6 and Solaris SPARC 7 software requirements.

Table 6-16 Solaris SPARC 2.6 and Solaris SPARC 7 Software Requirements

Software Requirements	Solaris SPARC 2.6 and Solaris SPARC 7 (32-bit)
Operating system	Solaris SPARC 2.6 with patch 105591-07. Solaris SPARC 7 (32-bit) with patch 106327-06.
C/C++ compilers	The following compilers are required are required on both Solaris 2.6 and Solaris 7, but only for a WebLogic Enterprise development environment. Sun Microsystems, Inc. Workshop Compiler C++ 5.0 **Standard mode and Compatibility mode,** plus patches 107289-03, 107357-05, 107311-09. While Sun's patches are cumulative, they are only cumulative for a given component, and each of these three patches pertains to a different component: ■ 107289-03 is for the C compiler ■ 107357-05 is for "BE" "build environment" ■ 107311-09 is for the C++ compiler
Java 2 Software Development Kit (SDK) for the development environment	Java 2 SDK 1.2.2_05 for Solaris.

Table 6-16 Solaris SPARC 2.6 and Solaris SPARC 7 Software Requirements

Software Requirements	Solaris SPARC 2.6 and Solaris SPARC 7 (32-bit)
Java 2 JRE for the run-time environment	JRE 1.2.2_05. This is needed for the BEA WebLogic EJB Deployer.
Non-BEA CORBA Java client	Java 2 SDK 1.2 IDL ORB (run time).
Internet browsers for the BEA Administration Console	Netscape 4.61. Netscape 4.7.
Database for CORBA C++ applications	Oracle 7.3.4 on Solaris 2.6. Oracle 8.1.5, also known as Oracle 8i, on Solaris 7.
Database for CORBA Java and J2EE applications	Oracle 7.3.4 (Type 2) on Solaris 2.6; no XA. Oracle 8.1.5, also known as Oracle 8i, supports XA, on Solaris 7.
JDBC drivers	jdbcKona/Oracle 7.3.4 (Type 2), no XA. WebLogic Enterprise JDBC/XA for Oracle 8.1.5, also known as Oracle 8i (Type 2); supports XA.
SSL certificate authorities	Verisign. Netscape.
LDAP directory server	Netscape Enterprise Server.

Additional Notes

- When using Oracle, Programmer/2000 Pro*C/C++ version 2.2.3.0.0 is required to build the WebLogic Enterprise University samples.
- EJB and RMI do not require C or C++.
- JDBC/XA users need a C compiler and linker to run the `buildtms` and `buildXAJS` commands.

- Java IDL users need a C preprocessor. On UNIX systems, the C preprocessor comes with the system.
- JNI users need a C or C++ compiler and linker.
- BEA Tuxedo users need a C or C++ compiler or linker.
- CORBA C++ users need a C++ compiler and linker.
- For the BEA Administration Console, the table indicates browser support if the GUI is configured for 40-bit, 56-bit, or 128-bit encryption. If the GUI is configured for zero-bit encryption, Netscape 4.61 or later is supported.
- When the optional WebLogic Enterprise Encryption Package software has been installed:
  - The WebLogic Enterprise 5.1 ISL/ISH supports SSL 3.0 for IIOP connections.
  - The WebLogic Enterprise 5.1 CORBA C++, CORBA Java, and RMI clients support SSL 3.0, and SSL connectivity between these clients and the WebLogic Enterprise ISL/ISH has been certified.
  - Secure Sockets Layer (SSL) is not supported for Tuxedo client connections to the WebLogic Enterprise (Tuxedo) WSL/WSH. Tuxedo Link Level Encryption is available for encryption of these connections and encryption of connections between machines and domains.
  - Although WebLogic Server supports SSL connections from its clients, the WebLogic Enterprise Connectivity feature in WLS 4.5.1 does not support SSL in the connection pools between WLS and the WebLogic Enterprise ISL/ISH. However, SSL connectivity is supported between the J-Engine and the T-Engine in WebLogic Enterprise 5.1.
- To support certificate-based authentication when using SSL, WebLogic Enterprise provides an LDAP-based certificate retrieval mechanism. This has been certified for use with the LDAP Directory server included with Netscape Enterprise Server.

Network Requirements

TCP/IP using the TLI network interface.

Disk Space Requirements

The disk space requirements for installation on Solaris systems depends on which components you select during the installation, and whether other WebLogic Enterprise 5.1 components have been installed previously. Use the estimates in Table 6-17 as guidelines. These requirements are approximate and have been rounded up to the nearest megabyte (MB).

Table 6-17 Solaris 2.6 and Solaris 7 (32-Bit) Disk Space Requirements

Components	Solaris 2.6 and Solaris 7 (32-bit)
All WebLogic Enterprise servers, all WebLogic Enterprise clients, and the BEA Administration Console server software	87 MB
Servers only	All servers: 69 MB Tuxedo server only: 22 MB CORBA C++ server only: 43 MB CORBA Java server only: 68 MB J2EE server only: 69 MB
Clients only	All clients: 29 MB Tuxedo client only: 8 MB CORBA C++ client only: 20 MB RMI/EJB client only: 6 MB CORBA Java client only: 23 MB
Administration	BEA Administration Console: 12 MB
Encryption Packages, 56-bit or 128-bit	2 MB for LLE only on Tuxedo server or client system 4 MB for LLE and SSL

Mounting and Unmounting the CD

The Solaris Volume Management software automatically mounts CDs on `/cdrom/cdrom0/s0`.

It is not necessary to unmount CDs on Solaris systems. However, it is necessary to issue a command to open the CD reader.

To open the CD reader, `cd` to `root` and enter `eject`.

Tuning Parameters

You probably need to reconfigure the Solaris kernel before running BEA WebLogic Enterprise software, because the default values of some tuning parameters are too low.

To adjust the tuning parameters, proceed as follows:

1. Determine whether the current values are adequate.

   For instructions about determining whether the current tuning parameter values are adequate, refer to “Verifying IPC Requirements” on page 4-17.

2. Reset the tuning parameters as necessary.

   Information regarding kernel configuration is provided in the Solaris `systune`(1M) man page.

Table 6-18 shows the default settings for the parameters and the settings used for the University sample applications. Use these settings as a starting point; however, your applications may require different settings.

The parameters currently set on your system are located in `/etc/<systemname>`.

Table 6-18 University Sample Applications Default Settings

Solaris Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmsys:shminfo_shmmax	SHMMAX	131072	67108864
shmsys:shminfo_shmseg	SHMSEG	6	100

Table 6-18 University Sample Applications Default Settings (Continued)

Solaris Name	Traditional Name	Default Setting	Setting for University Sample Applications
shmsys:shminfo_shmmni	SHMMNI	100	300
semsys:seminfo_semmns	SEMMNS	60	5048
semsys:seminfo_semmni	SEMMNI	10	5029
semsys:seminfo_semmsl	SEMMSL	25	2000
semsys:seminfo_semmap	SEMMAP	10	5024
semsys:seminfo_semmnu	SEMMNU	30	1024
semsys:seminfo_semume	SEMUME	10	128
msgsys:msginfo_msgmni	MSGMNI	50	1024
msgsys:msginfo_msgmap	MSGMAP	100	2048
msgsys:msginfo_msgmax	MSGMAX	2048	65535
msgsys:msginfo_msgmnb	MSGMNB	4096	65535
msgsys:msginfo_msgssz	MSGSSZ	8	256
msgsys:msginfo_msgtql	MSGTQL	40	2048
msgsys:msginfo_msgseg	MSGSEG	1024	8192
maxusers	maxusers	32	200
max_nprocs	NPROC	10+16*maxusers	(MAXUSERS*3)+64
maxuprc	MAXUP	max_nprocs-5	(NPROC * 9) / 10
semsys:siminfo	semusz		1024
semsys:siminfo	semvmx		32767
semsys:siminfo	semaem		16384

Part III J-Engine Installation

7 Overview of Installing WebLogic Server 5.1

This chapter contains instructions on installing, setting up, and starting **WebLogic Server** and the **WebLogic jDriver for Oracle** type-2 JDBC driver. A PDF version of these installation documents is also available.

What's New in WebLogic Server, Version 5.1

See the Release Notes at http://www.weblogic.com/docs51/release_notes/index.html for complete coverage of new features and upgrade issues.

Users of previous versions of WebLogic Server should take note of the following:

- **Windows NT only**: WebLogic Server is shipped with a Java Runtime Environment (JRE) that contains the Java classes for the Java Development Kit (JDK), version 1.2 (also called Java 2). Previous versions of WebLogic Server were shipped with both a 1.2 and 1.1.7 JRE, selectable from the Windows Start menu or with the **`wlconfig`** program. These JRE selection methods are no longer available.

  You can run WebLogic Server with either version of the JDK, but some WebLogic Server features (such as JDBC 2.0) require the use of a version 1.2 JDK.

- **Windows NT only**: The JRE mentioned above does not include classes that are required for use with certain tools such as the EJB compiler (`ejbc`). To use such tools you must install and configure a JDK for use with Weblogic Server. See

"Installing WebLogic Server Using the InstallShield Distribution (Windows NT)" on page 8-1 for more information.

- **Oracle users only:** The WebLogic jDriver for Oracle (formerly called jdbcKona/Oracle) is now available in several versions. The one you uses depends on your Oracle client installation, the version of the Oracle API you will use to connect to the Oracle server, and your platform. You must place the appropriate file in your system's path or shared library path for this driver to function. *Unlike previous releases of* WebLogic Server, *which had only one such file that was always present in the default path, you now must specify this path setting explicitly.* For details and instructions on setting these options, see "Setting Your Path and Client Libraries" on page 11-6.
- **WebLogic RMI over IIOP.** If you are using WebLogic RMI over IIOP, you must use JDK 1.3. There are some important restrictions regarding the use of JDK 1.3. For details, see Using WebLogic RMI over IIOP at http://www.weblogic.com/docs51/classdocs/API_rmi_iiop.html#StartServer.

Checking Your Package

When you open the BEA WebLogic Enterprise box, it includes a J-Engine CD that contains installation packages for BEA WebLogic Server (including WebLogic Enterprise Connectivity) and BEA Jolt.

Hardware Requirements

- 64 MB of RAM
- At least 80 MB of free hard disk space
- One of the certified WebLogic Server platforms. See http://www.weblogic.com/docs51/platforms/index.html for more information.

Software Requirements

The software requirements vary among platforms and operating systems and are frequently updated by BEA. Check the Platforms Support page (http://www.weblogic.com/docs51/platforms/index.html) on the BEA Web site for the latest information on your platform and operating system.

Upgrading from an Earlier Release of WebLogic Server

Important Notes

- **Version 5.1 of WebLogic Server requires a different classpath and command line to start WebLogic Server than was required in earlier releases.** These changes are discussed in detail in this document.
- **You will not be able to use any scripts or shortcuts you may have used to start previous versions of WebLogic Server with this release.** New scripts are included with this release that you can modify for your environment. For more information, see "Starting WebLogic Server Using Scripts" on page 10-24.
- If you are using either the WebLogic jDriver for Informix4 (formerly called jdbcKona/Informix4) or jDriver for Microsoft SQL Server (formerly called jdbcKona/MSSQLServer4) type 4 JDBC drivers, you must also upgrade them for use with WebLogic Server **5.1**. You can obtain these drivers from the same location where you obtained WebLogic Server.

Steps to Take Before Installation

1. Save your current license files. Open the directory where your registered installation is located and copy your `WebLogicLicense.xml` or `WebLogicLicense.class` file into a safe place. You will be instructed where to place your license file later in these instructions.
2. Save your `weblogic.properties and weblogic.policy` files to a safe location.
3. Save any user-written code or compiled classes to a safe location.
4. To safeguard your applications and environment, BEA recommends that you copy your entire WebLogic distribution to a safe location or otherwise back up your previous installation. Do not install a new version of WebLogic Server on top of a previous version

Steps to Take After Installation

1. Rerun the WebLogic utility **`ejbc`** on your Enterprise Java Beans.
2. Rerun the WebLogic RMI compiler, **`rmic`** on any existing code to regenerate the wrapper classes so that they are compatible with the new version of WebLogic Server.

Installing WebLogic Server on Your Platform

The following documents contain detailed instructions for installing WebLogic Server:

- "Installing WebLogic Server Using the InstallShield Distribution (Windows NT)" on page 8-1.
- "Installing WebLogic Server from a Zip Archive (UNIX, Windows NT)" on page 9-1.

8 Installing WebLogic Server Using the InstallShield Distribution (Windows NT)

The InstallShield distribution makes it easy to install WebLogic Server on your Windows NT computer. The InstallShield program unpacks the distribution, sets up your WebLogic properties and security policy files, installs a Java Runtime Environment (JRE), and sets up shortcuts to run WebLogic Server.

You can also install WebLogic Server from a zip archive. See "Installing WebLogic Server from a Zip Archive (UNIX, Windows NT)" on page 9-1 for more information. However, using the zip archive does not automatically set up properties, shortcuts, and Windows Registry settings. BEA recommends that Windows NT users use the InstallShield distribution.

If you are upgrading from a previous release of WebLogic Server, you can either uninstall the previous version or install the new version in a different directory. If you are re-installing the same version of WebLogic Server, uninstall it first.

Uninstalling a Previous Release

To uninstall a previous release:

1. Click **Start**—>**Settings**—>**Control Panel**
2. Double-click **Add/Remove Programs**.
3. Select **WebLogic version x.x.x** (Where **x.x.x** is the WebLogic Server version number.)
4. Click **Add/Remove**.

Running the InstallShield Program

1. Locate the **`weblogic510.exe`** file on your J-Engine CD.
2. Double click the **`weblogic510.exe`** file. The InstallShield program begins to install WebLogic Server.
3. Follow the instructions on the screen. The InstallShield program prompts you for the following additional information:
   - The name of the directory where you want to install WebLogic Server. If you are upgrading from a previous release, install WebLogic Server into a new directory. BEA recommends that you install WebLogic Server in a top-level directory. For example, `c:\weblogic`.
   - A **System Password.** Select a password that you will use to access administrative functions of the WebLogic Server. If you forget the password, you can retrieve it by looking in the `weblogic.properties` file, under the property `weblogic.password.system`.
   - Evaluation password. If you are installing WebLogic Server from an evaluation CD, go to the URL listed on the CD packaging and complete the registration process. After you submit your online registration, you will receive a password by email. Enter this password when prompted by the InstallShield.

Note: If you have purchased the CD version of WebLogic Server, you will not need this password. You will receive a set of license keys by email. To use these keys, follow the instructions under "Updating a License" on page 10-12 before starting WebLogic Server.

4. Specify `JAVA_HOME`.

   WebLogic Server ships with a Java Runtime Environment (JRE). This JRE does not include classes that are required for use with certain tools such as the EJB compiler (`ejbc`). To use such tools you must install and configure a JDK for use with Weblogic Server.

   If you will be starting WebLogic Server using the Windows **`wlserver`** native program, from the Windows Start menu, or when running WebLogic Server as a Windows NT Service, you must use the **`wlconfig`** program to specify the directory containing your Java Development Kit (JDK). For example:

   ```
   wlconfig -JAVA_HOME c:\java
   ```

   For more information, see "Windows Convenience Programs" on page 10-15.

Next Steps

1. Oracle users only.

   If you will be using the supplied Oracle JDBC driver (WebLogic jDriver for Oracle, formerly called jdbcKona/Oracle) you must explicitly set your **`PATH`** to include both the Oracle-supplied libraries and the appropriate BEA-supplied libraries. See "Installing WebLogic jDriver for Oracle" on page 11-1 for details.

2. Starting WebLogic Server

   The WebLogic Server distribution is now installed on your computer. To find out how to set up and start WebLogic Server, please see "Setting Up and Starting WebLogic Server 5.1" on page 10-1.

9 Installing WebLogic Server from a Zip Archive (UNIX, Windows NT)

Overview

This section tells you how to install WebLogic Server using the zip archive. This zip archive is required for installing WebLogic Server on supported UNIX systems and may also be used for installation on Windows NT.

Note: When installing WebLogic Server on a UNIX system, do not unzip the distribution on a Windows NT machine and then copy that installation to a UNIX machine.

Installing on Windows NT Using the Zip Archive

Installing WebLogic Server on Windows NT using the zip archive instead of the InstallShield means that the following steps will not be performed automatically:

- "Windows Convenience Programs" on page 10-15 will not be installed.

- Start menu shortcuts will not be set up.
- The `weblogic.properties` file will not be modified.
- The `weblogic.policy` file will not be modified.
- You will be unable to install WebLogic Server as a Windows NT service.

BEA recommends that you use the InstallShield version when installing on Windows NT. For more information, see "Installing WebLogic Server Using the InstallShield Distribution (Windows NT)" on page 8-1.

Upgrading from a Previous Release

If you have a version of WebLogic Server earlier than **5.1.0**, you should either remove your previous installation or re-name its directory. **Do not install the new release on top of an older release**.

Installing from the Zip Archive

Note: If you are installing on Windows NT, please ignore the steps labeled **(UNIX only)**.

1. Locate the **`weblogic510.zip`** file on your J-Engine CD. The weblogic.zip file is located in the `\wls` directory which is located in the root directory
2. **(UNIX only)** Create a UNIX *user* to install WebLogic Server, such as **`weblogic`** (optional). This allows you to control access to the distribution and to set permissions for your WebLogic distribution. See the documentation for your operating system for details. You may also want to create a *group* that has permissions to access the distribution.
3. **(UNIX only)** Log in with the WebLogic user you created.

4. Select a directory for the installation. BEA recommends that you install WebLogic Server in a directory where you normally install shared applications, such as `/usr/local/weblogic`. If you are upgrading from a previous version of WebLogic Server, rename or delete the root directory of your old installation.

5. Unzip the distribution. You can use the **`unzip`** utility to un-pack the distribution (or **`WinZip`** on Windows NT), or, if you already have a Java Development Kit (JDK) installed, you can use the Java **`jar`** utility. (The **`jar`** utility is not included with the JRE.) A `weblogic` directory will be created in the directory where you execute the jar command. For example,

   ```
   $ jar -xvf path/weblogic510.zip
   ```

   (where `path` is the path to the `weblogic510.zip` file)

   unzips the distribution into a directory called **`weblogic,`** located beneath the current directory.

6. Edit the **`weblogic.properties`** file, located in the top-level directory where you unpacked the WebLogic Server distribution. The `weblogic.properties` file contains name-value pairs for properties that set the functionality of the WebLogic Server. To run the server with a basic configuration, you must edit several properties:

   - Administrator's password. Edit the property `weblogic.password.system`, adding your own system administrator's password. This user-selected password is used to access administrative functions of WebLogic Server such as the WebLogic Console. The default minimum length for the password is 8 characters and the maximum is 16 characters (this can be changed, see Setting WebLogic Properties at http://www.weblogic.com/docs51/admindocs/properties.html#usergroup). For example,

     ```
     weblogic.password.system=myPassword
     ```

   - Modify paths to your installed directory. The default `weblogic.properties` file uses a path of `/weblogic` as the default location for various files. If you have installed WebLogic Server into a different directory, replace all the `/weblogic` entries with the correct directory.

   - Modify external paths. The `weblogic.properties` file refers to several directories outside of the WebLogic Server installation. Examine all instances of **`c:/`** in the `weblogic.properties` file and correct these entries as needed.

- Install a performance pack. If you are installing WebLogic Server on Windows NT, Solaris 2.6/2.7, or AIX 4.3, you can add a native performance pack that uses a platform-optimized (native) socket muxer to improve server performance. To use a performance pack, make sure the following property is defined in your `weblogic.properties` file (the default `weblogic.properties` file shipped with your distribution already defines this property and sets it to *true*):

  ```
  weblogic.system.nativeIO.enable=true
  ```

7. If you are using Java 2 (JDK 1.2), modify the `weblogic.policy` file. This is covered in detail under "Setting up the Java Security Manager for Java 2" on page 10-9.

8. **(UNIX only)** Set the file permissions (optional). After you unpack the distribution, the permissions for all of the files will be **`644`** (read/write access for the user, read access for the group and for all). For security reasons, you may want to change these permissions, particularly on sensitive files such as `weblogic.properties`, `weblogic.log`, and `weblogic.policy`. For these sensitive files, BEA recommends that you set the permissions to **`640`** (no access for "all").

9. **(UNIX only)** If you will be running WebLogic Server as a web server listening for requests on port 80, please see Additional steps on UNIX at http://www.weblogic.com/docs51/admindocs/http.html#unixsteps.

10. **(UNIX only)** If you will be using performance packs or WebLogic ZAC, you must set your **load (**or **shared) library path** to point to the directory containing the native libraries for your platform. (On most UNIX systems, this is called the `LD_LIBRARY_PATH`, on HP-UX, it is called `SHLIB_PATH`, and on IBM AIX it is called `LIBPATH`. See your operating system documentation for instructions on setting this variable.) These libraries are located in the directory shown in the table below.

Platform	Directory containing shared library
IBM AIX	*`weblogic`*`/lib/aix`
HP-UX 11	*`weblogic`*`/lib/hpux11`
SGI IRIX	*`weblogic`*`/lib/irix`
Red Hat Linux	*`weblogic`*`/lib/linux`

Platform	Directory containing shared library
Sun Solaris	*weblogic*/lib/solaris
Compaq Tru64 UNIX	*weblogic*/tru64unix

(Where *weblogic* is the directory containing your WebLogic Server installation.)

11. **(UNIX only)** If you are using the HP-UX platform, please see the note on shared libraries at http://www.weblogic.com/docs51/techsupport/sharedlibs.html#hpux.

Next Steps

1. Oracle users only.

   If you will be using the supplied Oracle JDBC driver (WebLogic jDriver for Oracle, formerly called jdbcKona/Oracle) you must explicitly set your **SHARED LIBRARY PATH** to include the appropriate BEA-supplied libraries. See "Installing WebLogic jDriver for Oracle" on page 11-1 for details. Your Oracle-supplied client libraries must also be included in the shared library path.

2. Starting WebLogic Server

   The WebLogic Server distribution is now installed on your computer. To find out how to set up and start WebLogic Server, please see "Setting Up and Starting WebLogic Server 5.1" on page 10-1.

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CHAPTER

10 Setting Up and Starting WebLogic Server 5.1

This section guides you through setting up your computer to run a single WebLogic Server. The steps listed here will prepare your computer to run WebLogic Server in a minimal, basic configuration. As you begin developing and deploying applications using WebLogic Server, you will define additional properties that set up the WebLogic services or Application Program Interfaces (API) that you use in your code. Additional information is available in the WebLogic Server Developers Guides for each API at http://www.weblogic.com/docs51/classdocs/index.html.

There are several ways you can start WebLogic Server. Window NT users can start WebLogic Server immediately after running the Install Shield by using the Windows "Start Menu" on page 10-14. The InstallShield distribution also allows Windows users to use "Windows Convenience Programs" on page 10-15 to start WebLogic Server.

Additional ways of starting WebLogic Server, including "Starting WebLogic Server from the Command Line" on page 10-18, and "Starting WebLogic Server Using Scripts" on page 10-24 are also described in this document. Follow the tasks listed below to correctly set your environment before using the command line or scripts to start WebLogic Server.

For information on setting up a WebLogic Cluster, please see Setting up a WebLogic Cluster, at http://www.weblogic.com/docs51/cluster/index.html, in the WebLogic Server documentation.

Tasks to Set Up and Start WebLogic Server

Installing a JDK

WebLogic Server requires that you have a Java Development Kit (JDK) installed on your computer. A JDK provides a Java runtime environment (the Java Virtual Machine or JVM) and tools for compiling and debugging your Java applications. There are versions of the JDK for Windows NT and Solaris available free from JavaSoft and SunSoft. JDKs for other platforms are available from the platforms' manufacturers.

These Java environments are constantly under revision and are frequently updated with new releases and bug fixes. For more information on the latest JDKs supported for running WebLogic Server, check the WebLogic Platform support page at *http://www.weblogic.com/docs51/platforms/index.html*.

If you installed WebLogic Server on Windows NT using InstallShield, a Java Runtime Environment (JRE) is automatically installed and configured to run WebLogic Server. A JRE provides only a runtime environment, and does not include development tools such as compilers and debuggers. Many Java applications developed for deployment with WebLogic Server require that a compiler be available while an application is running. For these applications, you will need to install a JDK.

Native Versus Green Threads

Most JDKs include an option to run the JVM using *native* or *green* threads. Always run WebLogic Server using *native* threads. Some JVMs, such as the JDK 1.2.2 for Solaris default to green threads. Usually passing the `-native` option on the `java` command line will force the JVM to use native threads. However, this implementation is not consistent across JDKs. Consult the documentation for you JDK to make sure that you correctly specify the use of native threads.

Hot Spot

Hot Spot is an enhancement to the standard JVM that uses a Just-in-time compiler and other features designed to improve performance. If you want to use a Hot Spot JVM, check the WebLogic Server platforms page to make sure that its use is supported for your platform.

Under most JDKs you can specify that the Hot Spot JVM not be used by adding the `-classic` option to the `java` command line. This can be useful if you require thread dumps while debugging an application. Because Hot Spot uses a JIT, thread dumps are not available.

Setting the Environment

If you wish to run WebLogic Server from the command line or with scripts, follow the procedures in this section to set up your system PATH, Java system classpath, WebLogic classpath, `weblogic.properties` file, `weblogic.policy` file, and licenses.

Setting the System PATH

Set your system PATH to include the `java\bin` directory of your JDK and the `weblogic\bin` directory. If you are using the type-2 WebLogic jDriver for Oracle, you must also include the path to both the Oracle-supplied and the BEA-supplied client libraries for your driver. See "Installing WebLogic jDriver for Oracle" on page 11-1 for more information. On Windows NT, you would use the following command to set your path in a command window:

```
$set path=c:\java\bin;c:\weblogic\bin;%path%
```

Where *java* is the directory containing your JDK and *weblogic* is the directory containing your WebLogic Server installation.

Setting the Classpath

In the Java environment, the Java virtual machine uses the classpath to locate the classes it needs to run an application. Setting your classpath correctly is essential for running WebLogic Server or any Java application. WebLogic Server uses a process called *dynamic class loading* and therefore requires a combination of two settings for classpath:

- The command line **`-classpath`** option, which sets the **Java system classpath.** These are the classes WebLogic Server requires to start.
- A system property called **`weblogic.class.path`**, which sets the **WebLogic classpath** and specifies classes used while running WebLogic Server.

Although it is common practice for Java users to set the Java system classpath with the CLASSPATH environment variable, BEA recommends, when starting WebLogic Server, that you set your Java system classpath from the command line, using the **-classpath** option of the **java** command, which overrides any environment CLASSPATH setting. Using this procedure ensures that only the correct classes are loaded and that conflicting classes are not loaded.

Note: If you are using Microsoft SDK for Java (Jview) as your JDK, you must set the Java system classpath with the environment variable CLASSPATH. Using the **/cp** command line option to specify the Java system classpath will not allow WebLogic Server to start. For more information, see "Microsoft SDK for Java (JView)" on page 10-7.

These instructions apply only to running WebLogic Server. If you will be running any WebLogic examples, Java utilities, WebLogic clients, or other Java applications, you will need to set the classpath appropriately for those applications. For more information see Setting classpath at *http://www.weblogic.com/docs51/admindocs/classpath.html*. You can also find instructions for setting the classpath in the documentation for the examples and utilities.

Upgrading from a Previous Release

If you are upgrading from any earlier release of WebLogic Server, you should pay special attention to classpath issues because the requirements have changed. WebLogic Server now uses a new class loader to load classes. The class loader requires that you specify the classpath differently and also requires you to update any scripts or shortcuts you use to run WebLogic Server.

If you have Enterprise Java Beans compiled under an earlier release, you must perform several steps, including re-compiling, to update them for use with this release. For more information, see Upgrading EJBs to WebLogic Server Version 5.1 at http://www.weblogic.com/docs51/classdocs/API_ejb/EJB_upgrade.html.

If you have any user-written or third-party server-side classes, copy them to:

c:\weblogic\myserver\serverclasses

If you have any user-written or third-party client-side classes, copy them to

c:\weblogic\myserver\clientclasses

Where *c:\weblogic* is the path to the directory where you installed WebLogic Server.

Setting your Java System Classpath

The following must be included as arguments to the **`-classpath`** option on the **`java`** command line:

- `/java/lib/classes.zip`
  Omit if you are using Java 2 (JDK 1.2.x)
- `/weblogic/classes/boot`
- `/weblogic/eval/cloudscape/lib/cloudscape.jar` (This entry is necessary only if you will be using the "Cloudscape DBMS" on page 10-9.)
- `/weblogic/lib/poolorb.jar` (This entry is necessary only if you will be using WebLogic Enterprise Connectivity and JDK 1.2.x.)

  Where */weblogic* is the path to the directory where you installed WebLogic Server and */java* is the path to the JDK directory.

Setting your WebLogic Classpath

The following must be included as values for the **`-Dweblogic.class.path`** property. These classes will be loaded using the Weblogic classloader:

- `/weblogic/classes`
- `/weblogic/license`
- `/weblogic/lib/weblogicaux.jar`
- `/weblogic/myserver/serverclasses`
- The path to any other third-party or user-written classes.
  Occasionally, you may encounter classes that cannot be placed in the WebLogic classpath. If you receive any unexplained "Class not found" errors, the problem may be that the class was written in such a way that it cannot be loaded with the class loader used by WebLogic Server. Such a class should be included in the Java system classpath as an additional argument to the **`-classpath`** option.

Example of setting classpath to run WebLogic Server under JDK 1.1.x (should be entered all on one line):

```
$java -ms64m -mx64m -classpath
  c:/java/lib/classes.zip;
  c:/weblogic/classes/boot
  -Dweblogic.class.path=c:/weblogic/classes;
  c:/weblogic/license;
```

```
c:/weblogic/lib/weblogicaux.jar;
c:/weblogic/myserver/serverclasses weblogic.Server
```

Where *c:/weblogic* is the path to the directory where you installed WebLogic Server and *c:/java* is the path to your JDK directory.

Verbose Output of Classloader

To see the location of classes loaded by the WebLogic classloader, you can set the following property in the command line or script used to start WebLogic Server:

`-Dweblogic.classloader.verbose=true.`

When this property is set, the location of loaded classes will be displayed as WebLogic Server starts up.

Microsoft SDK for Java (JView)

The command line syntax for **`jview`** is different from the **`java`** command. To run WebLogic Server under **`jview`**, make the following substitutions:

- **`jview`** for **`java`**
- **`/d:`** for the **`-D`** option (to set properties)

Note that jview does not support the class loader used by WebLogic Server. A WebLogic Server started under jview will not be able to use the class loader to load classes from the WebLogic classpath (the classes normally specified with the `weblogic.class.path` property). Since the class loader is not used, **you will not be able to use the Hot Deploy feature for deploying EJBs or servlets in a running WebLogic Server without having to restart the server.**

Specify the following special property when starting the server under jview. This property prevents WebLogic Server from using the `weblogic.class.path property` to load classes:

```
/d:weblogic.system.disableWeblogicClassPath=true
```

To run WebLogic Server under jview, do not specify the `weblogic.class.path` property on the command line. Instead, specify those classes that would otherwise go in the WebLogic classpath in the Java system classpath, with the environment variable `CLASSPATH`, along with the classes which normally belong in the Java system classpath.

```
jview /d:weblogic.system.disableWeblogicClassPath=true
 weblogic.Server
```

Where *c:\weblogic* is the path to the directory where you installed WebLogic Server.

Using jview with WebLogic COM

If you are using WebLogic COM, also set your trusted classpath. See Using WebLogic COM at *http://www.weblogic.com/docs51/classdocs/API_com.html* for more information.

The WebLogic Frequently Asked Questions also has a section on jview at *http://www.weblogic.com/docs51/techsupport/faq/3rdparty.html#jview*.

Using jview with RMI

If you will be using RMI with jview, you must add the following zip file to your Java system classpath (by adding it to the `CLASSPATH` environment variable) when starting WebLogic Server:

```
weblogic/lib/rmiForMs.zip
```

Where *weblogic* is the directory where you installed WebLogic Server

Starting WebLogic Server Statically

You can start WebLogic Server statically, without using the `weblogic.class.path` to specify its classes. This can be useful when using some Integrated Development Environments (IDE) or when running a debugger. *However, when you start WebLogic Server statically, you can not deploy EJBs or servlets in a running WebLogic Server (re-starting WebLogic Server is required).*

To start WebLogic Server statically:

1. Do not use the `weblogic.class.path` property on the command line. Instead, specify all of the classes required to start WebLogic Server and run your applications using the environment variable `CLASSPATH`. This includes the classes described in this document as belonging in the Java system classpath *and* those belonging in the WebLogic classpath.

2. Add the following property on the Java command line you use to start WebLogic Server:

```
-Dweblogic.system.disableWeblogicClassPath=true
```

This property prevents WebLogic Server from using the `weblogic.class.path` property to load classes.

Cloudscape DBMS

WebLogic Server comes with a trial version of an all-Java database management system (DBMS) called **Cloudscape**. The WebLogic Tour and some of the example code shipped with WebLogic Server use this DBMS. You can also use it for testing if you do not have another DBMS available. If you will be using Cloudscape, you must include it in your Java system classpath. Normally third-party classes such as these should be included in the WebLogic classpath (with the `weblogic.class.path` property). However, due to some differences in the Cloudscape product, this jar file should be included in the Java system classpath (using the `-classpath` option). For additional information, see Using the Cloudscape database with WebLogic at http://www.weblogic.com/docs51/techsupport/cloudscape.html.

Setting up the Java Security Manager for Java 2

When you run WebLogic Server under Java 2 (JDK 1.2.x), the server uses a **Java Security Manager** to control access to system resources. Java Security Manager requires a **security policy** file to set up the permissions. The WebLogic distribution contains a security policy file (called `weblogic.policy`) that contains a set of default permissions that allows you to start WebLogic Server without creating your own security policy.

Modifying the weblogic.policy File for General Use

Windows NT InstallShield users may skip the remainder of this section. InstallShield modifies the `weblogic.policy` file automatically.

To modify the `weblogic.policy` file included with your distribution:

1. Edit the following two lines in the `weblogic.policy` file, changing the items in **bold** to match the location of the directory where you installed WebLogic Server:

   ```
   grant codeBase "file:/c:/weblogic/-" {

   permission java.io.FilePermission "c:${/}weblogic${/}-", ...
   ```

2. Set these two properties on the Java command line when you start WebLogic Server:

   - `java.security.manager` tells the JVM to use a security policy. You do not need to specify any arguments to this property.
   - `java.security.policy` tells the JVM the location of the security policy file to use. The argument is the fully qualified file name of the security policy file, in this case, `weblogic.policy`.

   For example,

   ```
   $ java ... -Djava.security.manager
    -Djava.security.policy==c:/weblogic/weblogic.policy
   ```

   Be sure to use "==" instead of "=" when specifying `java.security.policy`, so that only the `weblogic.policy` file is used by Java security manager. The == causes the `weblogic.policy` file to override any default security policy. A single equal sign causes the `weblogic.policy` file to be appended to an existing security policy. For more information on setting up a security policy, see the article Default Policy Implementation and Policy File Syntax on the JavaSoft website at http://java.sun.com/products/jdk/1.2/docs/guide/security/PolicyFiles.html.

Modifying the weblogic.policy File for Third-party or User-written Classes

The best location for your server-side user code is the `weblogic/myserver/serverclasses` directory. If you have third party or user-written classes that are not in that directory, also:

1. Copy the entire block of code in the `weblogic.policy` file from "`grant codebase` ..." to the closing bracket and semicolon.
2. Paste the selection back into the `weblogic.policy` file below the section you just copied.

3. Edit the `grant codeBase` and the `permission java.io.FilePermission` statements so that the directories point to the location of your third party or user-written code.

   This procedure creates a security policy for your code that contains exactly the same permissions as those for the WebLogic Server. You should examine these permissions closely to make sure that this is the security policy you want to use for those directories. For more information on setting up a security policy, see the article Default Policy Implementation and Policy File Syntax on the JavaSoft website at http://java.sun.com/products/jdk/1.2/docs/guide/security/PolicyFiles.html.

Caution: Using JavaSoft JDK version 1.2.1 on UNIX systems applies security policy improperly if your WebLogic software is not installed in the root directory of the file system or disk drive. Policy is only applied correctly if the path in a `grant codeBase` URL has just one component. For example, if you install WebLogic Server in `c:\test\weblogic`, (or even `/home/weblogic` on Solaris), you will see `AccessControlExceptions` even though you use the correct URL in your policy file.

To work around this limitation, you can either install WebLogic in the root directory (recommended) or modify the URL so that it contains only the first component of the path to your WebLogic installation, for example:

```
grant codeBase "file:/c:/test/-" {
```

This problem has been acknowledged by Sun Microsystems as bug # 4261298.

Installing a WebLogic License

Your WebLogic distribution requires a valid license to run. This section tells you how to install and update WebLogic licenses.

Evaluation Licenses

An evaluation copy of WebLogic Server is enabled for 30 days so you can start using WebLogic Server immediately. To use WebLogic Server beyond the 30-day evaluation period or to use clustering (see http://www.weblogic.com/docs51/cluster/index.html for more information) features,

you will need to contact your salesperson about further evaluation or purchasing a license for each IP address on which you intend to use WebLogic Server. All WebLogic Server evaluation products are licensed for use on a single server with access allowed from up to 3 unique client IP addresses.

If you downloaded WebLogic Server from the BEA website, your evaluation license is included with the distribution. InstallShield users will also receive a password by email. The InstallShield program will prompt you for this password during the installation process.

If you obtained WebLogic Server from an evaluation CD, follow the instructions on the CD for obtaining an evaluation license.

Other Licenses

When you purchase a license for WebLogic Server you will receive a set of license keys by email. To use these keys, follow the instructions below, under "Updating a License" on page 10-12.

Updating a License

You need to add new keys to your existing license file if you have purchased more software, if you have applied for and received an extension to your 30-day evaluation, or if you get a new distribution that includes new products. You will receive a set of permanent, non-expiring license keys by email as an attachment after purchase. If you are evaluating WebLogic Server's clustering feature, you may receive a set of evaluation keys for clustering.

To add new license keys to your existing license file:

1. Open the message containing the keys you received by email when you purchased a license from BEA Systems, Inc.
2. Open the `WebLogicLicense.xml` file in a text editor. (Make sure you don't edit this file in Microsoft Word, or any other word-processing program that will save the file as a binary.)
3. Copy the keys from the email and paste them at the top of the XML file, after the `<WEBLOGIC-LICENSES>` tag.

   For example, a key for clustering looks something like this:

   ```
   <WEBLOGIC-LICENSES>
   ```

```
<LICENSE PRODUCT="WebLogic/ClusterII"
 IP="000.000.900.900"
 UNITS="5"
 EXPIRATION="31-Mar-2001"
 KEY="w20f8s08480v0adpup3485paprtnp8ac"
/>

... </WEBLOGIC-LICENSES>
```

4. Save the `WebLogicLicense.xml` file into your WebLogic license directory. If you have installed with defaults, that will be `/weblogic/license`.

5. Save your license key information and a copy of your `WebLogicLicense.xml` file in a safe place outside the WebLogic distribution. Although no one else will be able to use your license keys, you should probably save this information in a place protected from either malicious or innocent tampering by others. When you upgrade WebLogic Server, keep your original `WebLogicLicense.xml` and add new keys to it for any new services you purchase.

Upgrading Licenses from a Previous Release

Prior to release 4.0 of WebLogic Server, licenses were distributed in a compiled Java `.class` format. WebLogic licenses are now distributed in an XML format. If you are upgrading from an earlier release of WebLogic Server, please copy your license files, called either `WeblogicLicense.XML` or `WebLogicLicense.class` to your *`weblogic`*`/license` directory. (Where *`weblogic`* is the directory containing your WebLogic Server installation.)

If you purchase more than one product from WebLogic, you will have more than one entry in your license file. If you have purchased licenses for versions previous to 4.0, you may also have a `.class` format license file. All of your license files can be used together. When the WebLogic Server starts up, it looks for multiple license files in both formats in the following order:

1. `.class` files in the *`weblogic`*`/license` directory
2. `.XML` files in the directory specified with the weblogic.system.home property
3. `.XML` files in the WebLogic Server classpath.

If WebLogic Server encounters an expired license, it will *not* continue to look for additional licenses. For this reason you should remove expired license keys from your license files. (If you are using a `.class` license file, you must recompile the `WeblogicLicense.java` file after removing the expired license.)

Always restart WebLogic Server after making any changes to your license files.

For users who have `.class` license files, BEA recommends that you use the convertLicense utility (see *http://www.weblogic.com/docs51/techstart/utils.html#licenseConverter*) to convert your license file to an XML format license. You can then combine your XML licenses into a single file by cutting and pasting between the two files. For information on editing an XML style license, see Installing a WebLogic License at *http://www.weblogic.com/docs51/techstart/license.html*.

If you need to add license keys to an older class-style license, please see Installing a WebLogic License at *http://www.weblogic.com/docs51/techstart/license.html*.

Starting WebLogic Server on Windows NT

Start Menu

If you installed WebLogic Server on Windows with the InstallShield kit, you can use the WebLogic Server shortcut on the Windows start menu to start the WebLogic Server. Click on:

Start—>Programs—>WebLogic 5.1—>WebLogic Server.

You can use the **`wlconfig`** utility to select the various defaults used when starting WebLogic Server from the Start menu. See "Windows Convenience Programs" on page 10-15 for more information about this utility.

NT Service

You can also run WebLogic Server as a Windows NT service. When installed as an NT service, WebLogic Server will start automatically when you boot the Windows NT computer. A WebLogic Server started in this way will use the same start up parameters (stored in the Windows Registry) that are used when starting a WebLogic Server using

the Windows start menu or the Windows convenience program **`wlserver.exe`**. These parameters may be changed by using the **`wlconfig.exe`** program, described under "Windows Convenience Programs" on page 10-15.

For additional information, see Using WebLogic Server as an NT 4.0 service at *http://www.weblogic.com/docs51/admindocs/ntservice.html*.

You must have administrator-level privileges to either install or uninstall an application as an NT service.

To install WebLogic Server as a Windows NT service:

1. Switch to the `weblogic\bin` directory.
2. Run `install.exe`. For example,

   ```
   c:\weblogic\bin> install.exe
   ```

3. If you wish to run multiple instances of WebLogic Server as NT services, name the instances by adding an additional parameter specifying the name for each server instance. For example:

   ```
   c:\weblogic\bin> install -name thisWebLogicServer
   ```

   Multiple instances of WebLogic Server can be useful when testing WebLogic Clusters on a single computer. There is additional information available on Installing and removing multiple WebLogic NT services at *http://www.weblogic.com/docs51/admindocs/ntservice.html#multiple*.

Windows Convenience Programs

The following programs (Windows NT only) may be run from the `weblogic/bin` directory:

Note: The names of these programs changed as of Version 5.0 of WebLogic Server:

`t3config` is now `wlconfig`
`t3server` is now `wlserver`
`t3console` is now `wlconsole`

`dbping.exe`
Tests your connection to a database.
Arguments:

DBMS

Can be one of the following:
ORACLE
MSSQLSERVER4
INFORMIX4

user

Valid username for database login. Use the same values and format that you use with isql for SQL Server, sqlplus for Oracle, or DBACCESS for Informix.

password

Valid password for the user. Use the same values and format that you use with isql, sqlplus, or DBACCESS.

DB

Name of the database. The format varies depending on the database and version. Use the same values and format that you use with isql, sqlplus, or DBACCESS. Type 4 drivers, such as MSSQLServer4 and Informix4, need additional information to locate the server since they cannot access the environment.

For example:

```
$ dbping ORACLE scott tiger demo
```

`install.exe`

Installs WebLogic Server to run as a Windows NT service.

`remove.exe`

Removes WebLogic Server as a Windows NT service.

`wlconfig.exe`

Makes changes to your installation configuration. Note that **`wlconfig.exe`** changes settings in the Windows NT registry and therefore these settings will remain the defaults until you run **`wlconfig.exe`** again. These settings are used when running the `wlserver.exe` convenience program (see below), when running WebLogic Server as an NT service, and when running WebLogic Server from the start menu.

The following options are available for **`wlconfig.exe`**. If no options are specified, **`wlconfig.exe`** prints a list of the current settings.

`-help`
Prints a list of optional arguments for the `wlconfig.exe` command.

`-ms`*`SizeInMb`*
Sets the initial Java heap size (in megabytes).
See WebLogic Server Performance Tuning Guide at *http://www.weblogic.com/docs51/admindocs/tuning.html#jvm execution* for information on setting heap size.

`-`*`mxSizeInMb`*
Sets the maximum Java heap size (in megabytes).
See WebLogic Server Performance Tuning Guide at *http://www.weblogic.com/docs51/admindocs/tuning.html#jvm execution* for information on setting heap size.

`-JAVA_HOME` *`path`*
Changes the JDK/JRE runtime directory on which the WebLogic Server installation depends. The default points to the directory where you installed the WebLogic distribution (for example, `c:\weblogic`), which is packaged with its own JRE.

`-classpath` *`path`*
Changes the system classpath on which the WebLogic Server installation depends. The default is unset; that is there are no directories in the classpath.

`-Dproperty=value`
Use the -D command to change other properties. These properties are stored in the Windows Registry and are used as command line arguments when starting the server using `wlserver.exe`, the Start menu, and when starting as an NT service.

`wlconsole.exe`
Runs the WebLogic Console, an administrative tool.

`wlserver.exe`
Runs WebLogic Server with the defaults defined by running `wlconfig.exe` (see above).

`version.exe`
Displays the current version of your WebLogic Server.

Starting WebLogic Server from the Command Line

The WebLogic Server is a Java class file, and like any Java application, you can start it with the **`java`** command. These instructions describe the options you need to include when starting WebLogic Server from the command line. The startup options described here will start WebLogic Server in a minimal configuration. To use any of the APIs or services of WebLogic Server, you should consult the Developers Guides, API Reference, and Deployment Guides included with the WebLogic Server documentation (available at http://www.weblogic.com/docs50).

You will notice that the command lines required to start WebLogic Server can be quite lengthy and tedious to type. To make sure that your start-up commands are accurate, BEA recommends that you incorporate these command lines into scripts that you can then use to start WebLogic Server. For more information, see "Starting WebLogic Server Using Scripts" on page 10-24.

Important Note Regarding WebLogic RMI over IIOP

If you are using **WebLogic RMI over IIOP**, see Using WebLogic RMI over IIOP at http://www.weblogic.com/docs51/classdocs/API_rmi_iiop.html#StartServer.

Requirements for Starting WebLogic Server

The following are required when starting WebLogic Server:

- Start WebLogic Server with the Java **`-ms64m`** and **`-mx64m`** options. These options allocate a minimum and maximum of 64 megabytes of Java heap memory to the WebLogic Server. These values assigned to these parameters can dramatically effect the performance of your WebLogic Server and are provided here only as general defaults. In a production environment you should carefully consider the correct memory heap size to use for your applications and environment. For more information on setting heap size, See WebLogic Server Performance

Tuning Guide at http://www.weblogic.com/docs51/admindocs/tuning.html#jvm execution.

- Set your **`-classpath`** option and **`weblogic.class.path`** as shown in "Setting your WebLogic Classpath" on page 10-6. These are the minimum requirements for classpath:
  - `-classpath c:/java/lib/classes.zip;`*`c:/weblogic`*`/classes/boot`

    If you are using Java 2, omit `c:/java/lib/classes.zip` from the `-classpath` option.
  - `-Dweblogic.class.path=`*`c:/weblogic`*`/classes;`*`c:/weblogic`*`/license;`*`c:/weblogic`*`/lib/weblogicaux.jar;`*`c:/weblogic`*`/myserver/serverclasses`

  Where *`c:/weblogic`* is the directory where you installed WebLogic Server and *`c:/java`* is the path to your JDK.
- If you are using Java 2, set the **`java.security.manager`** property and the **`java.security.policy`** property to point to the location of the `weblogic.policy` file. (See "Setting up the Java Security Manager for Java 2" on page 10-9 for information on setting up your `weblogic.policy` file).
- If you are not starting WebLogic Server from the installation directory, add

  `-Dweblogic.system.home=`*`c:/weblogic`*

  Where *`c:/weblogic`* is the directory containing your `weblogic.properties` file. (This is usually the same as the directory where you installed WebLogic Server.)
- If you are using **third-party container managed persistence**, add the following property to the command line:

  `-Dweblogic.home=`*`weblogic`*

  Where *`weblogic`* is the path to the directory where you installed WebLogic Server. Note that this property is different than the weblogic.system.home property (see http://www.weblogic.com/docs51/admindocs/properties.html#P2 for more information).

Command-line Examples

Here are some sample command lines you can use to start WebLogic Server. These examples assume that you installed WebLogic Server in the `c:/weblogic` directory and that your JDK 1.1 is located in the `c:/java` directory. Modify these commands, substituting the correct directories for your installation.

The samples also assume that you are starting WebLogic Server from the installed directory. If you are starting from a different directory, add the following property to the command line, substituting the directory containing your WebLogic Server installation:

`-Dweblogic.system.home=`*`c:/weblogic`*

Where *`c:/weblogic`* is the directory containing your `weblogic.properties` file. (This is usually the same as the directory where you installed WebLogic Server.)

Although these examples are broken into multiple lines for readability, the commands should be entered as one line.

JDK 1.1.x Example

```
$ java -ms64m -mx64m -classpath
 c:/java/lib/classes.zip;
 c:/weblogic/classes/boot
 -Dweblogic.class.path=c:/weblogic/classes;
 c:/weblogic/license;c:/weblogic/lib/weblogicaux.jar;
 c:/weblogic/myserver/serverclasses weblogic.Server
```

JDK 1.2 (Java 2) Example

```
$ java -ms64m -mx64m -classpath c:/weblogic/classes/boot
 -Dweblogic.class.path=c:/weblogic/classes;
 c:/weblogic/license;c:/weblogic/lib/weblogicaux.jar;
 c:/weblogic/myserver/serverclasses
 -Djava.security.manager
 -Djava.security.policy==c:/weblogic/weblogic.policy
 weblogic.Server
```

Jview Example

```
$ jview /d:weblogic.system.disableWeblogicClassPath=true
   weblogic.Server
```

There is important information you should be aware of when using Jview. Please read the section "Microsoft SDK for Java (JView)" on page 10-7.

Additional Options

- If you are not starting WebLogic Server from its installed directory, add:

  `-Dweblogic.system.home=c:/weblogic` (or the directory containing your `weblogic.properties` file)

- If you will be using the Cloudscape DBMS, add:

  `c:\weblogic\eval\cloudscape\lib\cloudscape.jar` to the `-classpath` option.

- Add the location of any third-party or user-written classes to the **`weblogic.class.path`** property. (When running under jview, place these in the Java system classpath, with the `/cp` option.)

Starting WebLogic Enterprise Connectivity

To start WebLogic Enterprise Connectivity with JDK 1.2 (Java 2), add the following to the Java system classpath:

```
c:/weblogic/lib/poolorb.jar
```

For more information, see the Developers Guide Using WebLogic Enterprise Connectivity at http://www.weblogic.com/docs51/classdocs/API_wlec.html.

Starting WebLogic Server from the WebLogic Console

The WebLogic Console is a pure-Java GUI management console where you can monitor WebLogic Server performance and other aspects of the WebLogic Server's environment. You can also use the console to start WebLogic Server. For more information, see Running the WebLogic Console at *http://www.weblogic.com/docs51/admindocs/console.html*.

To start WebLogic Server from the console:

1. Start the console from the Windows NT start menu by selecting **Start**—>**Programs**—>**WebLogic**—>**WebLogic Console**, or use the following command:

   ```
   $ java -mx32m -classpath c:/java/lib/classes.zip;
    c:/weblogic/classes;
    c:/weblogic/lib/weblogicaux.jar weblogic.Console
   ```

   Where *c:/java* is the path to your JDK (this may be omitted when running under Java 2) and *c:/weblogic* is the path to your WebLogic Server installation.

   You can also start the WebLogic Console with the supplied scripts, **`startConsole.sh`** (UNIX) and **`startConsole.cmd`** (Windows NT), and **`startConsoleJview.cmd`** (Windows NT running under Microsoft SDK for Java). These scripts are located in the root directory of your WebLogic distribution.

   You will need to modify these scripts for your environment. See "Starting WebLogic Server Using Scripts" on page 10-24.

2. From the console menu bar, click on:

   File —>Start a new WebLogic Server or Cluster.
   A dialog box will appear. Fill in the following information:

   Name of the server
   : The name of the WebLogic Server you are starting. This parameter is used when identifying WebLogic Servers within a WebLogic

Cluster. The default name for starting a single WebLogic Server is **`myserver`**.

WebLogic home
: The directory where you installed WebLogic Server.

Enable cluster
: Check this box if you are starting a WebLogic Server as part of a WebLogic Cluster.

Cluster name
: The name of the WebLogic Cluster that this WebLogic Server will join.

Advanced
: The **Advanced** button opens a dialog box where you can set the Listen port, SSL listen port, Java heap size, Multicast address, and bind address.

3. A dialog box will pop up saying that WebLogic Server has started successfully. Click OK.
4. Another dialog box labeled "Attach to WebLogic running WebLogic server" will appear. Fill in the following information:

User
: For privileged, administration-level access the user is always **`system`**.

Password
: This is the password you entered when installing WebLogic Server. It is stored in the `weblogic.properties` file under the property `weblogic.password.system`.

DNS host name
: The host name of the machine running WebLogic Server. The default is **localhost.**

Starting WebLogic Server Using Scripts

Sample scripts are provided with the WebLogic distribution that you can use to start WebLogic Server. You will need to modify these scripts to fit your environment and applications: The scripts are called **`startWebLogic.sh`** (UNIX) and **`startWeblogic.cmd`** (Windows NT). These scripts are located in the root directory of your WebLogic distribution.

To use the supplied scripts:

- Pay close attention to classpath settings and directory names.
- Change the value of the variable `JDK_HOME` to the location of your JDK.
- UNIX users must change the permissions of the sample UNIX script to make the file executable. For example:

  ```
  chmod +x startWebLogic.sh
  ```

Next Steps

Set Up Your Development Environment

Scripts called `setEnv.cmd` (Windows NT) or `setEnv.sh` (UNIX) are included in the root directory of your WebLogic Server installation. These scripts will set up the appropriate environment for development and running the code examples included with WebLogic Server. You will need to modify these scripts somewhat for your environment. For more information, see Setting your development environment at http://www.weblogic.com/docs51/techstart/environment.html.

Install JDBC Drivers for Use with WebLogic Server

If you will be using a JDBC driver for database access, see the following links:

Oracle

"Installing WebLogic jDriver for Oracle" on page 11-1. Users upgrading from an earlier release of WebLogic Server should pay special attention to their Oracle configuration. There are now several versions of this driver available and these additions require that you set your `PATH` (Windows NT) or `shared library path` (Unix) differently.

Using the Oracle thin driver with WebLogic Server at *http://www.weblogic.com/docs51/classdocs/oraclethin.html* contains information on using Oracle's thin driver (available from Oracle).

Informix

Installing WebLogic jDriver for Informix at *http://www.weblogic.com/docs51/techstart/install_jinf4.html*.

Microsoft SQL Server

Installing WebLogic jDriver for Microsoft SQL Server at *http://www.weblogic.com/docs51/techstart/install_jmsq4.html*.

Sybase

The jConnect JDBC driver from Sybase is now bundled with WebLogic Server. For information on using this driver with WebLogic Server, see Using the Sybase jConnect driver at http://www.weblogic.com/docs51/classdocs/jConnect.html.

Other Documentation

- Using WebLogic Clusters at http://www.weblogic.com/docs51/cluster/index.html.
- WebLogic Developer Center (http://www.weblogic.com/docs51/resources.html)
- WebLogic Administrators Guides (http://www.weblogic.com/docs51/admindocs/index.html)

- WebLogic Developers Guides (http://www.weblogic.com/docs51/classdocs/index.html)
- WebLogic API Reference (http://www.weblogic.com/docs51/classdocs/packages.html)
- WebLogic Server comes with many code examples to help you get started. See the Guide to the WebLogic code examples at http://www.weblogic.com/docs51/examples/index.html

CHAPTER

11 Installing WebLogic jDriver for Oracle

Overview

WebLogic jDriver for Oracle is a new name for the product formerly known as jdbcKona/Oracle.

WebLogic jDriver for Oracle, a Type-2 JDBC driver for the Oracle DBMS is included with WebLogic Server. For this driver to function, you must have a complete Oracle client installed on the machine that will be the client to the Oracle DBMS. This Oracle client installation contains vendor-supplied client libraries and associated files that WebLogic jDriver for Oracle requires to operate.

The WebLogic Server distribution includes a choice of several BEA-supplied native libraries for WebLogic jDriver for Oracle. The library that you choose depends on which Oracle client version you have installed on your client machine and which version of the Oracle API you will use to access your Oracle server. Installing this driver requires that both the BEA-supplied native library and the Oracle-supplied client libraries be available by including them in your the client's `PATH` (Windows NT) or `shared library path` (UNIX), as described below.

For information on using WebLogic jDriver for Oracle see Using WebLogic jDriver for Oracle (at http://www.weblogic.com/docs51/classdocs/API_joci.html).

Important Issues for Release 5.1

Please read the Release notes for details on the issues highlighted below.

Oracle Release Notes are also available on line at http://www.weblogic.com/docs51/classdocs/release_notes_joci.html.

Platform Support:

> Check the Release Notes or the WebLogic Platform Support page (at http://www.weblogic.com/docs51/platforms/index.html) in the online documentation for details about which platforms, operating systems, DBMS versions, and Java versions are supported for WebLogic jDriver for Oracle.

Important issues include:

- WebLogic jDriver for Oracle is not supported when using the Oracle 8 API and connecting to an version 7 Oracle DBMS.
- `Using CallableStatement.getResultSet()`
- Mixing different versions of the Oracle Client and Oracle Server
- Codeset conversion with CLOBs when using a different operating system on the client and server.

Other JDBC Drivers

BEA also has Type-4 JDBC drivers available for the Informix and Microsoft SQL Server DBMSs. These are pure-Java drivers and do not require vendor-supplied client libraries.

For more information on these drivers, please see: WebLogic JDBC Options, at http://www.weblogic.com/docs51/classdocs/jdbcdrivers.html.

Installation Steps

1. **Select the appropriate native library for your environment**.

   WebLogic jDriver for Oracle is shipped with `dll, sl,` or `so` files for various combinations of Oracle client versions, APIs, and platforms. You must place the appropriate file in your system's path or shared library path for this driver to function. *Unlike previous releases of* WebLogic jDriver for Oracle, *which had only one such file that was always present in the default path, you now must specify this path setting explicitly.* For details and instructions on setting these options, see "Setting Your Path and Client Libraries" on page 11-6.

2. Add the client libraries from your Oracle installation to your system PATH (Windows NT) or load library path (UNIX—the name of this variable differs among UNIX systems). Check your Oracle documentation for the location of these libraries. On Windows NT the client libraries are usually located in `c:\ORANT\bin`.

3. **Unpack the distribution.**

   If you have purchased WebLogic Server, WebLogic jDriver for Oracle is included with your distribution. No further steps are required to unpack the distribution. The remainder of these installation steps are required only for users of the stand-alone version of WebLogic jDriver for Oracle.

   If you haven't already, unpack the archive you downloaded *in the root directory* of your computer. You must use a program such as WinZip at *http://www.winzip.com* that preserves the directory structure of the archive. The files unpack into the `weblogic` directory.

   The instructions in this document assume that you are installing WebLogic jDriver for Oracle on a Windows computer and that you unpacked the archive in the root directory of your C drive. If you're installing on a different operating system or in a different location, check your system documentation for help in adjusting the commands shown in these instructions for your own environment.

4. **Add the** WebLogic jDriver for Oracle **classes directory to your CLASSPATH variable.**

   Note: If you are using the WebLogic jDriver for Oracle that is bundled with WebLogic Server, the classpath setting are the same as those required for

WebLogic Server. The standard start up scripts supplied with the WebLogic Server distribution will do this for you.

To change your CLASSPATH temporarily at a Windows Command Prompt, use this command:

```
$ set CLASSPATH=%CLASSPATH%;c:\weblogic\informix4\classes
```

To change your CLASSPATH permanently:

a. Double-click the System icon in the Control Panel.

b. Click the Environment tab.

c. In the lower panel, select the CLASSPATH variable. If no CLASSPATH variable is defined, add it.

d. Add `c:\weblogic\informix4\classes` to the value of the CLASSPATH variable. Use a semicolon (;) to separate the new path from the previous value of the variable, if any.

Any program you launch after you update the CLASSPATH variable in the System control panel will have access to the new value.

For more help setting your CLASSPATH, read Setting classpath at http://www.weblogic.com/docs51/admindocs/classpath.html. If you are using WebLogic jDriver for Oracle from within an IDE like Symantec Cafe or JBuilder, the procedure for adding classes to the CLASSPATH may be different.

5. **Install** WebLogic jDriver for Oracle **for use with browser applets.**

If you're planning to use WebLogic jDriver for Oracle to access databases via applets in a web browser, you must install the distribution on the computer executing the web server. Furthermore, the web server and the Informix database server must be running on the same computer. This is a security restriction enforced by most web browsers, including Netscape Navigator and Internet Explorer. For information about browser security and applets, read Troubleshooting Applet Security problems at http://www.weblogic.com/docs51/techsupport/appletsecurity.html.

The web server must also be able to find the WebLogic jDriver for Oracle class files. To ensure that the web server can find the files, install the WebLogic jDriver for Oracle distribution on your web server computer and then set the CLASSPATH on that computer as described in step 4. Be sure to restart the web server after you change the CLASSPATH so that the web server has access to the revised CLASSPATH value.

6. **Install a license file.**

   With the release of version 5.1 of WebLogic jDriver for Oracle, a new type of license is shipped with the distribution. This license uses an XML file to store the license keys.

   There are several issues to consider regarding your license for WebLogic jDriver for Oracle:

   - If you downloaded an evaluation version of the driver, your distribution includes an evaluation license. Your driver is ready for evaluation use.
   - If you have previously purchased a license for WebLogic jDriver for Oracle, *you must obtain an updated license file from your BEA contact person* and place that license in your WebLogic jDriver for Oracle installation.

   Copy your license key into your `WebLogicLicense.xml,` file. This file is located at *`weblogic`*`/informix4/license/WebLogicLicense.xml` (where *`weblogic`* is the directory containing your WebLogic jDriver for Oracle installation). For instructions on editing a WebLogic XML license file, see "Editing an Entry to the XML License File" on page 11-5.

   To purchase a permanent license for WebLogic jDriver for Oracle, contact sales@weblogic.com.

Editing an Entry to the XML License File

1. Open the message containing the key(s) you received by email when you purchased a license from BEA Systems, Inc.
2. Open the `WebLogicLicense.xml` file in a text editor. This file is located in one of the following directories:

   - Standalone driver: `weblogic/informix4/license`
   - Using the driver with WebLogic Server: `weblogic/license`

   (Where *`weblogic`* is the directory containing your WebLogic jDriver for Oracle or WebLogic Server installation.)

   Do not edit this file in Microsoft Word or any other word-processing program that will save the file as a binary.
3. Copy the keys from the email and paste them **at the top** of the XML file.

For example, if you have received a key, it'll look something like this:

```
<LICENSE PRODUCT="jdbcKona/Informix4"
      IP="000.000.900.900"
      UNITS="5"
      EXPIRATION="31-Mar-1999"
      KEY="w20f8s08480v0adpup43245paprtnp8ac"
/>
```

4. Save the `WebLogicLicense.xml` file into the same directory.
5. Save your license key information and a copy of your `WebLogicLicense.xml` file in a safe place outside the WebLogic distribution, preferably someplace you will remember. Although no one else will be able to use your license keys, you should probably save this information in a place protected from either malicious or innocent tampering by others. Please note that when you upgrade your WebLogic classes, you will want to keep your original `WebLogicLicense.xml` and add new keys to it for any new services you purchase.

Setting Your Path and Client Libraries

A native `dll`, `so,` or `sl` file containing your driver must be made available to your WebLogic jDriver for Oracle client by including its directory in your system `PATH` (Windows NT), `LD_LIBRARY_PATH` (most Unix systems), or `SHLIB_PATH` (HP-UX). The directory containing the correct file varies depending on several factors discussed below.

The vendor-supplied libraries from Oracle must also be included in your `PATH, load library path`, or `shared library path`. The location of the directory containing your Oracle client libraries will vary depending on your installation. On Windows NT, these libraries are normally placed into your machine's path by the Oracle installer.

Version 5.1 of WebLogic jDriver for Oracle now uses the `dll`, `so`, or `sl` files built with the Oracle 8 API as the native interface for accessing an Oracle DBMS. This API allows for improved connectivity to a version 7 or version 8 Oracle Server and also provides access to new features available only in Oracle 8 (some of these features require JDBC 2.0, which requires a Java 2 JVM).

An older version of these `dll`, `so`, or `sl` files that uses the Oracle 7 API, is also included with this release to assure backwards compatibility.

The tables below, under "Directory to Put in Your System PATH" on page 11-7, list the Oracle client version, the Oracle API version and the directory you must put in your system PATH to access that version of the driver.

JDBC 2.0

JDBC 2.0 features are only available when using a driver that uses the Oracle 8 API. You must also run your WebLogic jDriver for Oracle client under a Java 2 compatible JDK. Using JDBC 2.0 also requires using a different driver class and URL in your Java code. For more information, see JDBC 2.0 for Oracle in the document Using WebLogic jDriver for Oracle at http://www.weblogic.com/docs51/classdocs/API_joci.html#jdbc20.

Platform Considerations

For information on supported platforms and JVM versions for WebLogic jDriver for Oracle, see the WebLogic platform support page at http://www.weblogic.com/docs51/platforms/index.html#jdbc.

The minimum supported client library is Oracle version 7.3.4.

Directory to Put in Your System PATH

Windows NT

Add *weblogic*\bin and the appropriate directory from the table below to your PATH, for example:

```
$ set PATH=%PATH%;c:\weblogic\bin\oci805_8
```

Where c:*weblogic* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation.

Directory to Put in Your `PATH`

Oracle Client version	Oracle API version	Directory	Notes
7.3.4	7	`oci734_7`	Provided for backwards compatibility. No Oracle 8 or JDBC 2.0 features.
8.0.5	7	`oci805_7`	Provided for backwards compatibility. No Oracle 8 or JDBC 2.0 features.
8.0.5	8	`oci805_8`	Allows access to Oracle 8 and JDBC 2.0 features.
8.1.5	8	`oci815_8`	Allows access to Oracle 8 and JDBC 2.0 features.

Solaris

Add *`weblogic`*`/lib/solaris` and the appropriate directory from the table below to your **`ld library path`**. (Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation)

Directory to Put in Your `ld_library_path`

Oracle Client version	Oracle API version	Directory	Notes
7.3.4	7	`oci734_7`	Provided for backwards compatibility. No Oracle 8 or JDBC 2.0 features.
8.0.5	7	`oci805_7`	Provided for backwards compatibility. No Oracle 8 or JDBC 2.0 features.
8.0.5	8	`oci805_8`	Allows access to Oracle 8 and JDBC 2.0 features.
8.0.6	8	`oci806_8`	Allows access to Oracle 8 and JDBC 2.0 features.
8.1.5	8	`oci815_8`	Allows access to Oracle 8 and JDBC 2.0 features.

You must also include the path to your vendor-supplied client libraries from Oracle in your `ld_library_path`. The location of these libraries will depend on your Oracle client installation.

IBM AIX

WebLogic jDriver for Oracle for IBM AIX is available only for the Oracle 7 API. For a list of supported client versions, see Platform support for JDBC drivers at http://www.weblogic.com/docs51/platforms/index.html#jdbc.

Add the directory *`weblogic`*`/lib/aix` to your **`LIBPATH.`**

Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation.

HP-UX 11

Add *`weblogic`*`/lib/hpux11` and the appropriate directory from the table below to your **`SHLIB_PATH`**. (Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation)

Oracle Client version	Oracle API version	Directory	Notes
8.0.4	7	`oci804_7`	Provided for backwards compatibility. No Oracle 8 or JDBC 2.0 features.
8.0.5	8	`oci805_8`	Allows access to Oracle 8 and JDBC 2.0 features.
8.1.5	8	`OCI815_8`	Allows access to Oracle 8 and JDBC 2.0 features.

SGI IRIX

WebLogic jDriver for Oracle for SGI IRIX is available only for the Oracle 7 API. For a list of supported client versions, see Platform support for JDBC drivers at http://www.weblogic.com/docs51/platforms/index.html#jdbc.

- Irix users must run Java in N32 mode.
- You must have the Oracle 8.0.5 N32 client installed on your computer.

Add the directory `weblogic/lib/irixsh` to your **`LD_LIBRARYN32_PATH`**.

Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation.

Siemens MIPS

WebLogic jDriver for Oracle for Siemens MIPS is available only for the Oracle 7 API. For a list of supported client versions, see Platform support for JDBC drivers at http://www.weblogic.com/docs51/platforms/index.html#jdbc.

Add the directory `weblogic/lib/reliantunix` to your **`LD_LIBRARY_PATH`**.

Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation.

Compaq Tru64 UNIX

WebLogic jDriver for Oracle for Compaq Tru64 UNIX is available only for the Oracle 7 API. For a list of supported client versions, see Platform support for JDBC drivers at http://www.weblogic.com/docs51/platforms/index.html#jdbc.

Add the directory `weblogic/lib/tru64unix` to your **`LD_LIBRARY_PATH`**.

Where *`weblogic`* is the home directory of your WebLogic Server or WebLogic jDriver for Oracle installation.

Note for Microsoft SDK for Java (Jview) Users

- Version 5.00, build 3186 or later of Jview is required for WebLogic jDriver for Oracle.

- Jview does not support JDBC 2.0 features.

Checking Connections to the Oracle Database

Once you have installed WebLogic jDriver for Oracle you should check that you can use it to connect to your database. A utility called **dbping** is included with WebLogic Server that you can use to test this connection.

To use this helper application, type the following at the command line (on one line):

```
$ java -classpath
  c:\java\lib\classes.zip;c:\weblogic\classes;
  c:\weblogic\license;utils.dbping ORACLE user password server
```

Where *c:\weblogic* is the directory containing your WebLogic Server or WebLogic jDriver for Oracle installation and *c:\java* is the path to your JDK.

Note: If you are using Java 2 (JDK 1.2), omit "`c:\java\lib\classes.zip`" from the above command.

For more detailed instructions on how to verify your connection to a DBMS, see Testing connections.

If you have problems, check Troubleshooting problems with shared libraries on UNIX, at http://www.weblogic.com/docs51/techsupport/sharedlibs.html.

Setting Up a Connection Pool

If you are using WebLogic jDriver for Oracle with either WebLogic Server or WebLogic Express, you can set up a pool of connections to your Oracle DBMS that will be established when WebLogic Server is started. Since the connections are shared among users, these connection pools eliminate the overhead of opening a new database connection for each user.

Your application then uses a multitier (Type-3) JDBC driver, such as the WebLogic **Pool**, **JTS** or **RMI** driver to connect to WebLogic Server. WebLogic Server then uses WebLogic jDriver for Oracle and one of the existing connections from the pool to connect to the Oracle database on behalf of your application.

Configuring a Connection Pool with WebLogic Server

1. Include the vendor-supplied native libraries and the WebLogic native libraries for WebLogic jDriver for Oracle in the `PATH` (Windows) or `load library path` (UNIX) of the shell where you will start WebLogic Server (for details, see "Setting Your Path and Client Libraries" on page 11-6). For more information on starting WebLogic Server, see Setting up and Starting WebLogic Server at http://www.weblogic.com/docs51/install/startserver.html.

2. Add an entry to the `weblogic.properties` file specifying the connection pool properties (driver name, url, server, password, ACLs, etc.). For example:

```
weblogic.jdbc.connectionPool.OraclePool=\
      url=jdbc:weblogic:oracle:myServer:myPort,\
      driver=weblogic.jdbc.oci.Driver,\
      loginDelaySecs=1,\
      initialCapacity=4,\
      maxCapacity=10,\
      capacityIncrement=2,\
      allowShrinking=true,\
      shrinkPeriodMins=15,\
      refreshMinutes=10,\
      testTable=dual,\
      props=user=myUserName;password=secret;server=myServer;\


weblogic.allow.reserve.weblogic.jdbc.connectionPool.SQLPool=\
       guest,joe,jill
weblogic.allow.reset.weblogic.jdbc.connectionPool.SQLPool=\
       joe,jill
weblogic.allow.shrink.weblogic.jdbc.connectionPool.SQLPool=\
       joe,jill
```

   For more information on setting properties for connection pools, see JDBC Connection Pools, at http://www.weblogic.com/docs51/admindocs/properties.html#conpools, in the WebLogic Administrators guide *Setting WebLogic Properties.*

3. Start WebLogic Server.

Using the Connection Pool in Your Application

Client-side Applications

To use a connection pool in a client-side application, establish the database connection using the WebLogic JDBC/RMI driver. For more information, see

- Using WebLogic JDBC/RMI and WebLogic Clustered JDBC at http://www.weblogic.com/docs51/classdocs/JDBC_RMI.html.

Server-side Applications

To use a connection pool in a server-side application (such as a servlet), establish your database connection using the WebLogic `pool` or `jts` drivers. For more information, see:

- Using connection pools with server-side Java (in *Using WebLogic HTTP Servlets*) at *http://www.weblogic.com/docs51/classdocs/API_servlet.html#pools0*
- Creating a startup connection pool at *http://www.weblogic.com/docs51/classdocs/API_jdbct3.html#startupconnpool*

Using IDEs or Debuggers with WebLogic jDrivers

If you are using Symantec Cafe, other IDEs, or debuggers, copy the WebLogic-supplied native library to a new file with a name that ends in **_g** (before the dot).

For example on a Unix machine, copy `libweblogicoci36.so` to `libweblogicoci36_g.so`. For Windows NT, copy `weblogicoci36.dll` to `weblogicoci36_g.dll`

Next Step

See Setting your development environment, at http://www.weblogic.com/docs51/techstart/environment.html for information on setting up a development environment for running JDBC clients.

Using WebLogic jDriver for Oracle (at http://www.weblogic.com/docs51/classdocs/API_joci.html). *Developers Guide for WebLogic jDriver for Oracle*.

Part IV Encryption Package Installation

CHAPTER

12 WebLogic Enterprise Encryption Package Installation on Windows Systems

This chapter explains how to install the following optional BEA WebLogic Enterprise Encryption Package software products on Windows NT systems:

- WebLogic Enterprise 5.1 56-bit Encryption Package
- WebLogic Enterprise 5.1 128-bit Encryption Package

This topic includes the following sections:

- Before You Install
- Platforms Supported
- Installing the WebLogic Enterprise 5.1 Encryption Package on Microsoft Windows Systems
- Removing (Uninstalling) the WebLogic Enterprise Encryption Package from Your System

Notes: The Encryption Package software described in this chapter is distinct and separate from the SSL software that you install on J-Engine server systems, as described in Part II of this document.

When installing the Encryption Package software (formerly called Security Service) on a Tuxedo-only system, only the encryption libraries are updated. None of the SSL files are installed, nor are the SSL plug-ins registered.When installing on any other system (CORBA C++, CORBA Java, etc.), the encryption libraries are updated, the information about SSL is prompted for, the SSL files are installed, and the plug-ins are registered.

Also note that the Encryption software *cannot* be installed on a RMI/EJB client-only system.

For information about installing WebLogic Enterprise Encryption Package software products on a UNIX system, see Chapter 13, "WebLogic Enterprise Encryption Package Installation on UNIX Systems."

The WebLogic Enterprise Encryption Package software products are packaged on a CD that is separate from the WebLogic Enterprise product box. A WebLogic Enterprise Encryption Package CD is distributed only if you purchased this software. This software provides 56-bit or 128-bit Secure Sockets Layer (SSL) and Link-Level Encryption (LLE) features for WebLogic Enterprise applications. Each level of encryption is packaged on a separate CD.

The installation screens are similar for both levels of security. In this chapter, the sample screens are from a WebLogic Enterprise128-bit Encryption Package product installation on Microsoft Windows NT. Installation screens that are identical to the WebLogic Enterprise T-Engine installation screens are described, but not shown, in this chapter.

Before You Install

This topic includes the following sections:

- Installing a WebLogic Enterprise 5.1 Encryption Package Product to Support WebLogic Enterprise Connectivity
- Confirming That the WebLogic Enterprise 5.1 Software Has Been Installed

- LDAP Information Required During the Installation
- Before Re-installation, Backup LDAP Files
- Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services
- Check That Your Account Has Administrator Privileges

Installing a WebLogic Enterprise 5.1 Encryption Package Product to Support WebLogic Enterprise Connectivity

If you are installing a WebLogic Enterprise 5.1 Encryption Package product to support WebLogic Enterprise Connectivity (WLEC), you need to take the following steps:

1. Confirm that the WebLogic Enterprise 5.1 J-Engine server components have been installed on your machine, as described in Part II of this document.
2. Install either the WebLogic Enterprise CORBA C++ or CORBA Java client software on your machine, as described in the section "Microsoft Windows 2000 or NT 4.0 Installation Procedure" on page 2-8.
3. Complete the remaining steps described in the current chapter.

Confirming That the WebLogic Enterprise 5.1 Software Has Been Installed

Before you can install a WebLogic Enterprise 5.1 Encryption Package software product, you must first install at least one WebLogic Enterprise 5.1 server component, or one of the following WebLogic Enterprise 5.1 client component options:

- All WebLogic Enterprise client components (recommended)
- BEA CORBA C++ client
- BEA CORBA Java client

If you are installing a WebLogic Enterprise 5.1 Encryption Package software product on a Windows 98 or Windows 95 client system, you must first install one of the WebLogic Enterprise 5.1 client component options shown in the previous list.

If the target system only has the Tuxedo server or client software installed from the WebLogic Enterprise 5.1 installation, the WebLogic Enterprise 5.1 Encryption Package installation procedure only installs the Link-Level Encryption (LLE) components. The Secure Sockets Layer (SSL) components are not installed on this type of target system.

LDAP Information Required During the Installation

During the 56-bit or 128-bit Encryption Package installation, the procedure prompts you for the required LDAP server information shown in the following list.

If you do not know the appropriate LDAP values for the prompts, contact the person in your organization or company who is responsible for defining the LDAP server tree. At most companies, this person is the Security Administrator or the Directory Services Administrator.

Note: After the installation, it is not possible to modify a file to adjust these values. The only way to change these values is to re-install the WebLogic Enterprise Encryption Package software and specify the updated values. Therefore, it is important that you understand the appropriate values for the requested information before you start the installation.

- The hostname of the LDAP server computer system.
- The port on the LDAP server computer system that is listening for requests.
- An appropriate base object in the LDAP server tree. The **base object** is the point in the LDAP tree at which you want users to start searching for certificates. By defining a specific location in the LDAP tree, you can narrow the scope of the search for certificates on the relevant portion of the LDAP server tree, and avoid longer-than-necessary searches through irrelevant portions of the LDAP server tree.

Note: These LDAP prompts are not presented if the target system only has the Tuxedo server or client software installed (from WebLogic Enterprise 5.1). In this case, only the WebLogic Enterprise Encryption Package's Link-Level

Encryption (LLE) components are installed on the target system. During the WebLogic Enterprise Encryption Package installation procedure, the Secure Sockets Layer (SSL) components are not installed on this type of target system.

Before Re-installation, Backup LDAP Files

If you are re-installing the 56-bit or 128-bit WebLogic Enterprise Encryption Package software on a system, the installation procedure will overwrite the LDAP filter file if you selected its default name and location. By default, the LDAP filter file is installed in `%TUXDIR%\udataobj\security\bea_ldap_filter.dat`, where `TUXDIR` is the directory in which you installed the WebLogic Enterprise software. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree.

On re-installation, the Encryption Package installation procedure will also overwrite the LDAP peer validation rule file, `%TUXDIR%\udataobj\security\peer_val.rul`.

Before you re-install the Encryption Package software, temporarily rename these files if you do not want the installation procedure to overwrite them. After the installation procedure, rename the files back to their original names and locations.

Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services

Before beginning the installation, make sure no BEA Tuxedo or WebLogic Enterprise client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the Administration section of the WebLogic Enterprise online documentation.

Check That Your Account Has Administrator Privileges

You need administrator privileges to perform the installation. If you attempt to install the WebLogic Enterprise 5.1 Encryption Package software without administrator privileges, the following error message will be displayed:

```
Cannot Install Tuxedo IPC Helper Service.
```

Platforms Supported

The Microsoft Windows platforms listed in Table 12-1 are supported.

Table 12-1 Supported Microsoft Windows Platforms

Operating System	Release/Version
Microsoft Windows 2000	
Microsoft Windows NT	4.0 (Intel) Service Pack 5 (SP5)
Microsoft Windows 95	Service Pack 1
Microsoft Windows 98	

For the hardware and software requirements for NT, see Chapter 6, “WebLogic Enterprise T-Engine Platform Data Sheets.”

Installing the WebLogic Enterprise 5.1 Encryption Package on Microsoft Windows Systems

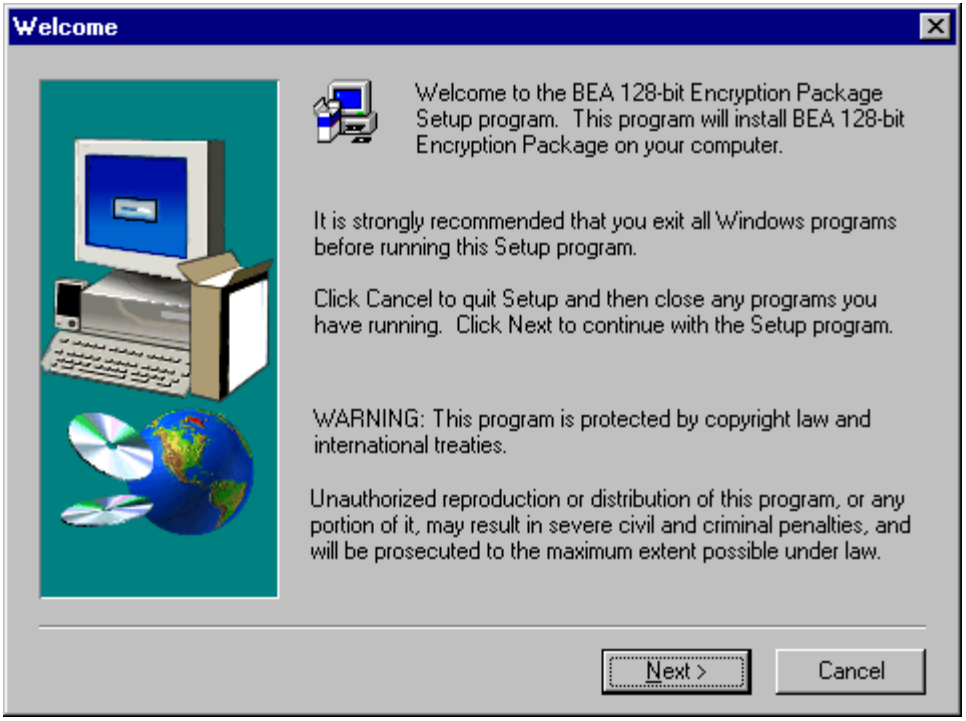
This section describes how to install the WebLogic Enterprise 56-bit or 128-bit Encryption Package software products on Microsoft Windows systems. The sample screens show the installation of the 128-bit Encryption Package software on a Windows NT system.

Microsoft Windows Installation Procedure

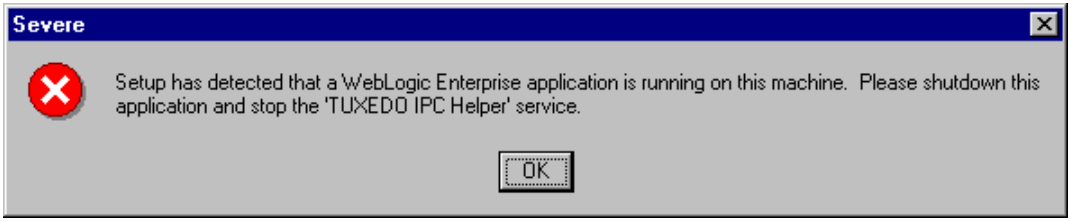
It will take approximately 5 minutes to install the software.

To install the WebLogic Enterprise 56-bit or 128-bit Encryption Package software on a Microsoft Windows system, perform the following steps:

1. Insert the WebLogic Enterprise Encryption Package software CD in the CD player. The Windows autorun feature is used to automatically begin the installation. (To bypass the autorun feature, hold down the Shift key while inserting the CD in the CD player. You can then run the `setup.exe` file in the `inwnt40` directory on the CD.)
2. The Setup screen is displayed, followed by the Welcome screen.

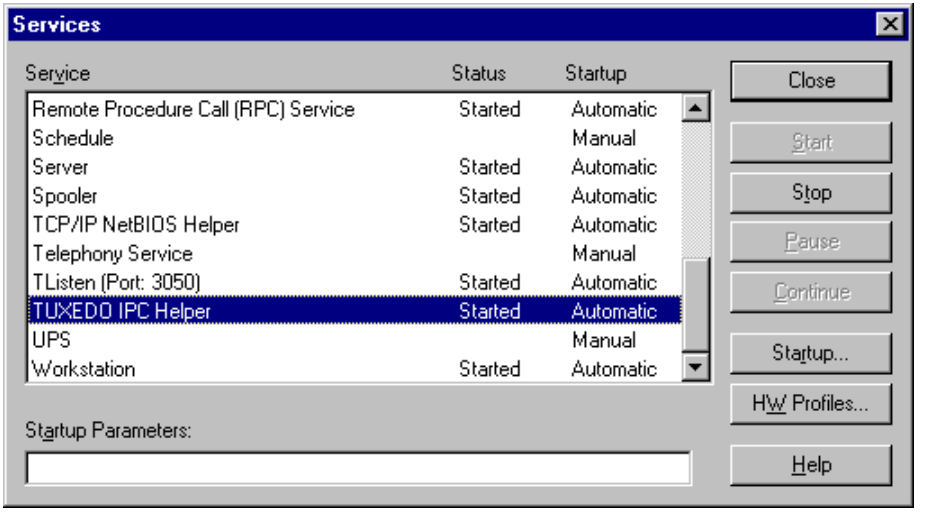


3. Click Next. The Software License Agreement screen is displayed. To accept the license agreement, click Yes.
4. The User Information screen is displayed. Enter your name and the name of your company and click Next.
5. If a WebLogic Enterprise or BEA Tuxedo application and related services are running, the Severe message screen is displayed:



If this happens, click OK, which will exit the installation without installing any portion of the software. Then use the `tmshutdown` command, if appropriate, to stop any running applications. Also stop any WebLogic Enterprise or BEA Tuxedo services, if appropriate. You can do this on Windows NT systems by clicking Start—>Settings—>Control Panel. In the Control Panel, open the Services panel. The Services screen is displayed.

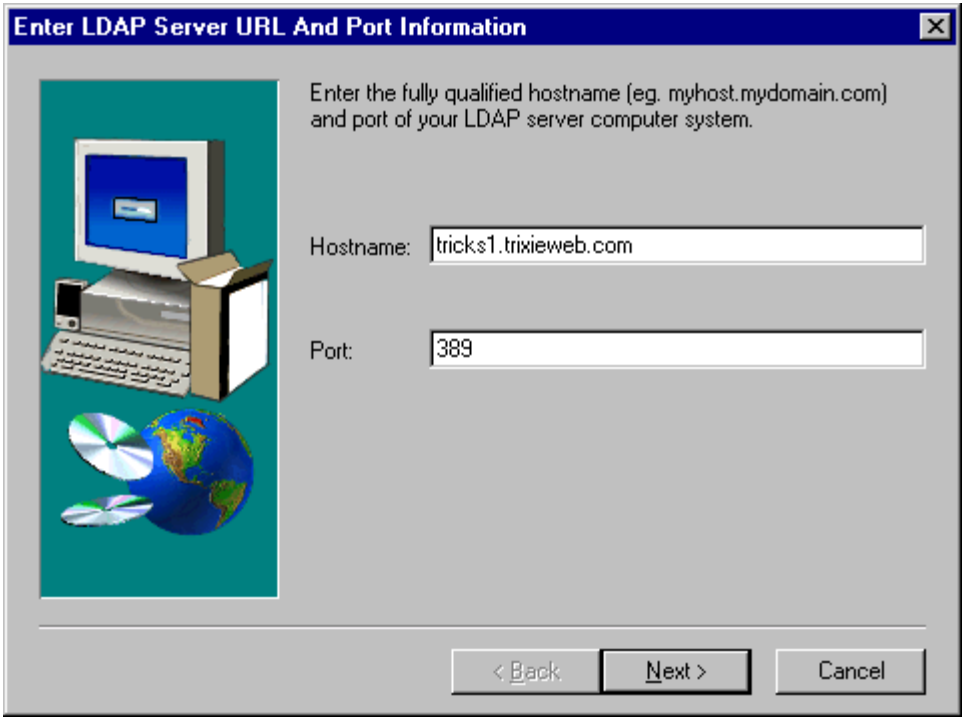
Scroll to the entries for Tuxedo IPC Helper and TListen. For each entry, select it



in the display box and click Stop to change its status from Started to Stopped. Then click Close. If you encountered the screens shown in this step, you will have to restart the installation program.

6. If you did not encounter the problem described in the preceding step, the installation program displays the Enter LDAP Server URL And Port Information screen.

   Note: If you installed only BEA Tuxedo server or client software on this system, the following screen is not displayed.

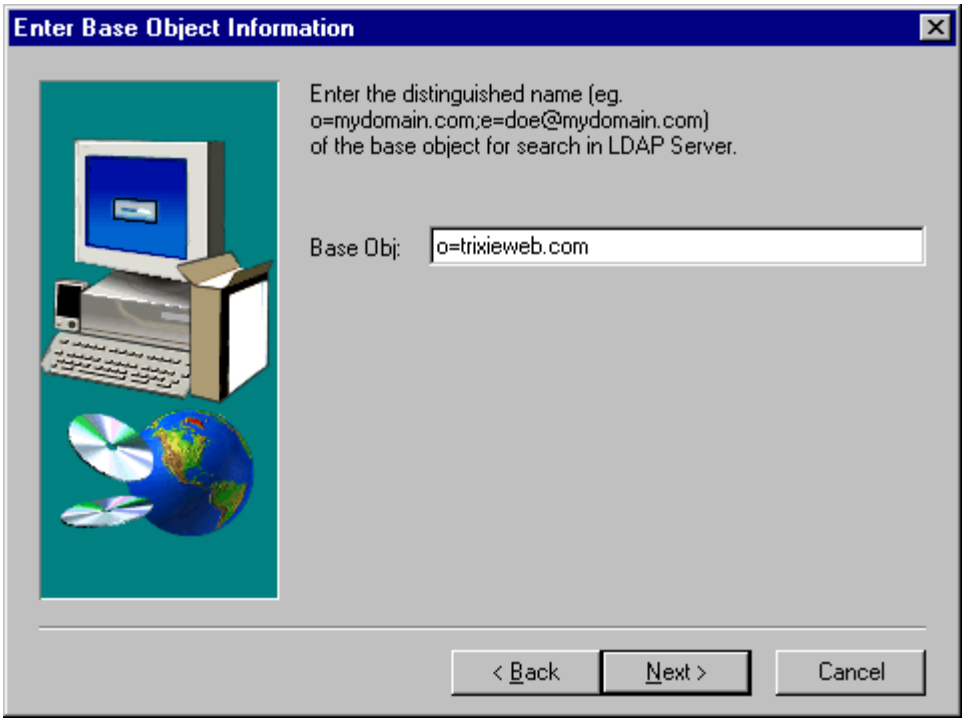


This information will be stored locally as a registered SSL certificate lookup plug-in that WebLogic Enterprise client and server applications can use.

- In the Hostname input box, enter the LDAP server's fully qualified node name and domain name.
- In the Port input box, enter the port on which the LDAP server is listening.

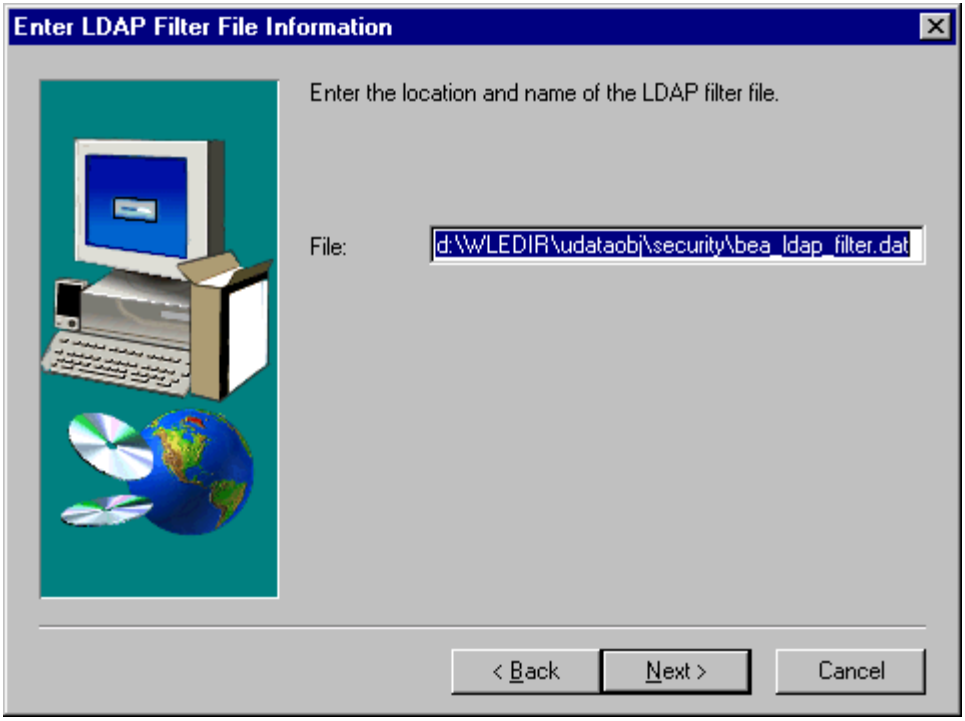
7. The Base Object screen is displayed.

   Note: If you installed only BEA Tuxedo server or Tuxedo client software on this system, the following screen is not displayed.

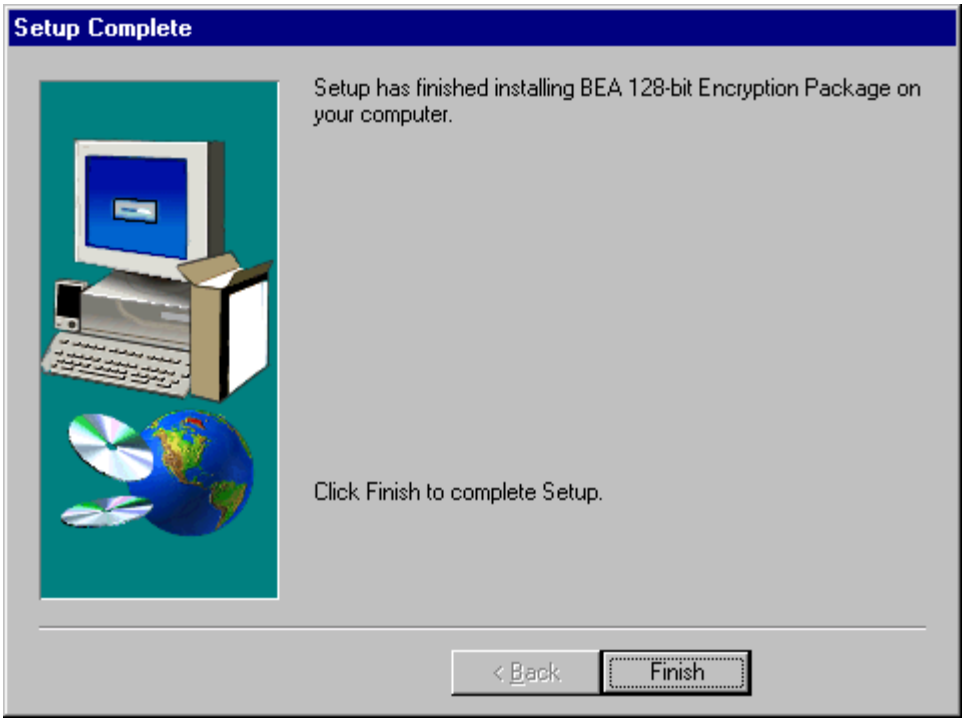


8. The base object is the point in the LDAP tree at which you want users to start searching; in this case, to start searching for certificates. There are no strict rules about the syntax for this value. Enter the base object string exactly as it was specified in the LDAP server tree. Click Next. The Enter LDAP Filter File Information screen is displayed.

   Note: If you installed only BEA Tuxedo server or client software on this system, the following screen is not displayed.



9. The default location for the LDAP filter file is `wledir\udataobj\security\bea_ldap_filter.dat`. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree. (For more information, see *Using Security* in the WebLogic Enterprise online documentation.) Click Next to accept this default; or, enter a new value and click Next. The Setup Complete screen is displayed:

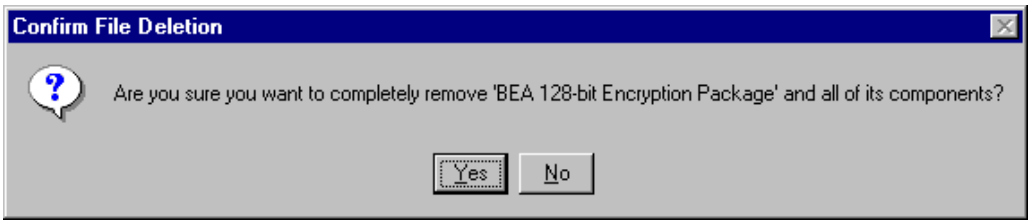


10. Click Finish to complete the installation.
11. Reboot your system. Your system restarts. If you attempt to run the WebLogic Enterprise software before you restart your system, the software may fail.

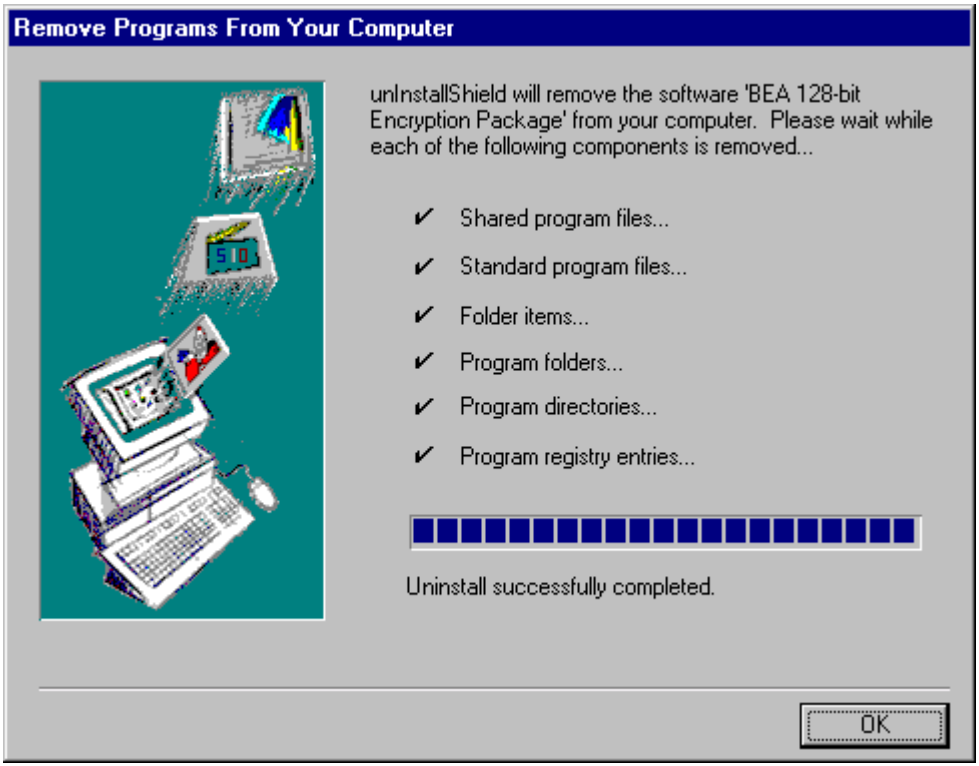
Removing (Uninstalling) the WebLogic Enterprise Encryption Package from Your System

To remove a WebLogic Enterprise Encryption Package product from your system, follow the steps in this section.

1. Log on to the system. If you are using a Microsoft Windows NT system, log on as the administrator or as a member of the Administrator group.
2. Make sure that no BEA Tuxedo or WebLogic Enterprise client or server applications are running. Use `tmshutdown` to shut down all WebLogic Enterprise applications.
3. On the Microsoft Windows taskbar, click Start —> Programs —> BEA 128-bit Encryption Package—> UnInstall BEA 128-bit Encryption Package. (If you installed the 56-bit version of the Encryption Package, the taskbar path is Start —> Programs —> BEA 56-bit Encryption Package —> UnInstall BEA 56-bit Encryption Package.)
4. The Confirm File Deletion screen is displayed. For example:



5. Click Yes to confirm the removal and to uninstall the WebLogic Enterprise Encryption Package product. The Uninstall screen is displayed. For example:



The WebLogic Enterprise Encryption Package product is removed from your system and from the Windows Registry.

13 WebLogic Enterprise Encryption Package Installation on UNIX Systems

This chapter explains how to install the following optional BEA WebLogic Enterprise Encryption Package software products on the supported UNIX systems:

- WebLogic Enterprise 5.1 56-bit Encryption Package
- WebLogic Enterprise 5.1 128-bit Encryption Package

This topic includes the following sections:

- Before You Install
- Platforms Supported
- Installing WebLogic Enterprise Encryption Package on UNIX Systems
- Removing (Uninstalling) the WebLogic Enterprise Encryption Package Software from Your System

Notes: The Encryption Package software described in this chapter is distinct and separate from the SSL software that you install on J-Engine server systems, as described in Part II of this document.

When installing the Encryption Package software (formerly called Security Service) on a Tuxedo-only system, only the encryption libraries are updated. None of the SSL files are installed, nor are the SSL plug-ins registered.When installing on any other system (CORBA C++, CORBA Java, etc.), the encryption libraries are updated, the information about SSL is prompted for, the SSL files are installed, and the plug-ins are registered.

Also note that the Encryption software *cannot* be installed on a RMI/EJB client-only system.

For information about installing WebLogic Enterprise Encryption Package software on a Microsoft Windows system, see Chapter 12, "WebLogic Enterprise Encryption Package Installation on Windows Systems."

The WebLogic Enterprise Encryption Package software is packaged on a CD that is separate from the WebLogic Enterprise product box. A WebLogic Enterprise Encryption Package CD is distributed only if you purchased this software. This software provides 56-bit or 128-bit Secure Sockets Layer (SSL) and Link Level Encryption (LLE) features for WebLogic Enterprise applications. Each level of encryption is packaged on a separate CD.

The installation screens are similar for both levels of security. In this chapter, the sample screens are from a WebLogic Enterprise 5.1 56-bit Encryption Package installation on a Sun Solaris 2.6 system.

Before You Install

This topic includes the following sections:

- Installing a WebLogic Enterprise 5.1 Encryption Package Product to Support WebLogic Enterprise Connectivity
- Confirming That the WebLogic Enterprise 5.1 Software Has Been Installed
- Environment Variables

- LDAP Information Required During the Installation
- Before Re-installation, Back Up LDAP Files
- Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services
- Checking That Your Account Has Administrator Privileges

Installing a WebLogic Enterprise 5.1 Encryption Package Product to Support WebLogic Enterprise Connectivity

If you are installing a WebLogic Enterprise 5.1 Encryption Package product to support WebLogic Enterprise Connectivity (WLEC), you need to take the following steps:

1. Confirm that the WebLogic Enterprise 5.1 J-Engine server components have been installed on your machine, as described in Part II of this document.
2. Install either the WebLogic Enterprise CORBA C++ or CORBA Java client software on your machine, as described in the section "UNIX Installation Procedure" on page 3-4.
3. Complete the remaining steps described in the current chapter.

Confirming That the WebLogic Enterprise 5.1 Software Has Been Installed

Before you can install the WebLogic Enterprise 5.1 Encryption Package software, you must first install at least one WebLogic Enterprise 5.1 server component, or one of the following WebLogic Enterprise 5.1 client component options:

- All WebLogic Enterprise client components (recommended)
- BEA CORBA C++ client
- BEA CORBA Java client

Environment Variables

The environment variables discussed in the section "Setting Up Your Environment on UNIX Systems" on page 4-12 must be set prior to installing the WebLogic Enterprise Encryption Package software. The `TUXDIR` and dynamic shared library path variables are critical to the success of this Encryption Package installation, because the SSL plug-in registration step depends on these variables.

LDAP Information Required During the Installation

During the installation of either the 56-bit or the 128-bit Encryption Package, the procedure will prompt you for the required LDAP server information shown in the following list.

If you do not know the appropriate LDAP values for the prompts, contact the person in your organization or company who is responsible for defining the LDAP server tree. At most companies, this person is the Security Administrator or Directory Services Administrator.

Note: After the installation, it is not possible to modify a file to adjust these values. The only way to change these values is to re-install the product. Therefore, it is important that you understand the appropriate values for the requested information before you start the installation.

- The hostname of the LDAP server computer system.
- The port on the LDAP server computer system that is listening for requests.
- An appropriate base object in the LDAP server tree. The **base object** is the point in the LDAP tree at which you want users to start searching for certificates. By defining a specific location in the LDAP tree, you can narrow the scope of the search for certificates on the relevant portion of the LDAP server tree, and avoid longer-than-necessary searches through irrelevant portions of the LDAP server tree.

Note: These LDAP prompts are not presented if the target system only has the Tuxedo server or client software installed (from WebLogic Enterprise 5.1). In this case, only the WebLogic Enterprise Encryption Package's Link-Level Encryption (LLE) components are installed on the target system. During the

WebLogic Enterprise Encryption Package installation procedure, the Secure Sockets Layer (SSL) components are not installed on this type of target system.

Before Re-installation, Back Up LDAP Files

If you are re-installing either the WebLogic Enterprise 56-bit or 128-bit Encryption Package software on a system, the installation procedure will overwrite the LDAP filter file if you selected its default name and location. By default, the LDAP filter file is installed in `$TUXDIR/udataobj/security/bea_ldap_filter.dat`, where `TUXDIR` is the directory in which you installed the WebLogic Enterprise software. The filter file is used to define search filters that can further refine the scope of searches in the LDAP server tree.

On re-installation, the Encryption Package installation procedure will also overwrite the LDAP peer validation rule file, `$TUXDIR/udataobj/security/peer_val.rul`.

Before you re-install the Encryption Package software, temporarily rename these files if you do not want the installation procedure to overwrite them. After the installation procedure, rename the files back to their original names and locations.

Stopping WebLogic Enterprise or BEA Tuxedo Applications and Related Services

Before beginning the installation, ensure that no BEA Tuxedo or WLE client or server applications are running. For information about the `tmshutdown` command, see *Starting and Shutting Down Applications* in the *Administration* section of the WebLogic Enterprise online documentation.

Checking That Your Account Has Administrator Privileges

On most systems, you need superuser privileges to mount the software CD. The account that you log on to to perform the installation must have administrative privileges.

Platforms Supported

The platforms listed in Table 13-1 are supported.

Table 13-1 Supported Platforms

Vendor	Operating System	Release/Version
Compaq	Tru64 UNIX	4.0f on Alpha systems
HP	HP-UX	11.00 32-bit plus patches B.11.00.B0315
IBM	AIX	4.3.3
SCO	Unixware	7.1.1 (C++ only)
Sun Microsystems	Solaris	Solaris 2.6 and Solaris 7 (SPARC)

For the hardware and software requirements for these operating systems, see Appendix 6, “WebLogic Enterprise T-Engine Platform Data Sheets.”

Installing WebLogic Enterprise Encryption Package on UNIX Systems

This section describes how to install the WebLogic Enterprise 56-bit or 128-bit Encryption Package software on the supported UNIX systems. The sample screens show the installation of the 56-bit Encryption Package software on a Solaris 2.6 system.

UNIX Installation Procedure

It takes approximately 10 minutes to install the software.

To install the WebLogic Enterprise Encryption Package software on a UNIX operating system, perform the following steps:

1. Log on to the system with administrative privileges.
2. Insert the WebLogic Enterprise Encryption Package CD into the reader.
3. Mount the CD as a file system. For platform-specific instructions on how to do this, see Appendix 6, "WebLogic Enterprise T-Engine Platform Data Sheets." On most systems you need superuser privileges to perform the mount.

   Note: If your system does not have a directly connected CD reader, you can mount the CD on a remote system, share (export) the CD file system, and then mount the remote file system. For detailed instructions for each platform, see Appendix 6, "WebLogic Enterprise T-Engine Platform Data Sheets." Alternatively, you can mount the CD on a remote system, copy the contents of the CD directory for your platform to the system in which you plan to install the WebLogic Enterprise software, and continue with the remainder of the installation procedure.

4. Use the `cd` command to change your working directory to the root of the WebLogic Enterprise Encryption Package software CD.
5. Run the `ls` command in the root directory to check the CD's contents. If all the files are in lowercase characters, begin the installation by entering:

```
sh install.sh.
```

If all the files are in uppercase characters, begin the installation by entering:

```
sh INSTALL.SH
```

6. The installation procedure lists the available platform choices. Enter the number that corresponds to the installation's target platform.

7. The remaining prompts in this chapter show a sample Encryption Package application on a Solaris 2.6 system. For example, a confirmation prompt is displayed:

```
** You have chosen to install software for **

BEA WebLogic Enterprise Release 5.1

This directory contains the BEA WLE Installation Software for
Sun Solaris v2.6 on Sun SPARC.

Is this correct? [y,n,q]:
```

Enter `y` to proceed; or enter `n` to redisplay the platform menu; or enter `q` to quit the installation.

8. If you entered y, a component menu is displayed:

```
To terminate the installation at any time
press the interrupt key,
typically <del>, <break>, or <ctrl+c>.

The following components are available:

  1 security  BEA Encryption Package 56

Select the one you wish to install [?,??,q]:
```

Enter the number 1 to select the Encryption Package; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter q to quit the installation.

9. If you entered the number 1 or pressed the Enter key, a packages menu is displayed:

```
The following packages are available:

  1 sec56     BEA Encryption Package 56 For WLE

Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]:
```

Enter the number 1 or the word all to install the Encryption Package for WebLogic Enterprise; or enter a single question mark (?) to display a brief help message; or enter two question marks (??) to redisplay the menu; or enter `q` to quit the installation.

10. If you entered the number 1 or the word all, the following messages are displayed:

```
BEA Encryption Package 56 For WLE
(sparc) Release 5.1
Copyright (c) 1999 BEA Systems, Inc.
All Rights Reserved.
BEA and WebLogic are trademarks of BEA Systems, Inc.

SSLplus is a trademark of Certicom Corporation, 1999-2000.
BSAFE is a trademark of RSA Data Security, Inc., 1999-2000.


WebLogic Enterprise must be installed prior to installing the
Encryption Package
```

11. The installation program checks for existing BEA software and prompts you for the WebLogic Enterprise base directory:

```
Location of existing BEA software installation (default:
/usr/local/wledir) [?,q]:
```

    Press the Enter key if the default value shown matches the base directory location of the WebLogic Enterprise software; or enter the correct path to the WebLogic Enterprise base directory.

12. If the installation program finds the WebLogic Enterprise software in the location specified, the installation continues. A confirmation message is displayed, and then the installation program checks for sufficient disk space. For example:

```
Using /usr/local/wledir as the base directory

Determining if sufficient space is available ...
5818 blocks are required
1032768 blocks are available to /usr/local/wledir
```

13. If sufficient space is found, the installation program starts moving files to the target system and displays messages.

    Note: In the following displays and steps, all the SSL-related messages and prompts starting with `"Unloading...SECSSL.Z"` through `"Registering SSL plug-in...finished"` (in step 20) are not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation. In this case, the Encryption

Package installation procedure installs the LLE software, but not the SSL software.

```
Moving /usr/local/wledir/lib/libgp.so.65 to
/usr/local/wledir/lib/libgp.so.65.0

Moving /usr/local/wledir/lib/libgp.a to
/usr/local/wledir/lib/libgp.a.0

Unloading /usr/local/wledir/spsol26/security/sec56/SEC56.Z ...
lib/libgp.so.65
lib/libgp.a
2750 blocks
... finished

Unloading /usr/local/wledir/spsol26/security/sec56/SECSSL.Z ...
lib/liborbssl.so.65
lib/libjsec.so
lib/libsecssl.so.65
lib/libwlesec.so.65
lib/libwlesys.so.65
locale/C/IJSSLN.text
locale/C/IJSSLN_CAT
udataobj/security/bea_ldap_filter.dat
udataobj/security/certs/peer_val.rul
udataobj/security/certs/revoked.crl
udataobj/security/certs/trust_ca.cer
2970 blocks
... finished
```

14. Enter information about the LDAP server. This information will be stored locally as a registered SSL certificate lookup plug-in that WebLogic Enterprise client and server applications can use. The following prompt is displayed:

    ```
    Enter fully qualified hostname for URL of the LDAP server system.
    [?,q]:
    ```

    Enter the LDAP server's fully qualified node name and domain, such as `myhost.mydomain.com`.

    Note: This prompt is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

15. Enter the port number on which the LDAP server will be listening for certificate requests:

    ```
    Enter a port number for the URL of the LDAP server system. [?,q]:
    ```

    For example, enter `389` if that is the correct port number. If you are not sure, check the value with the system administrator of the LDAP server.

Note: This prompt is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

16. The installation program displays a confirmation message:

    ```
    Using 'myhost.mydomain.com:389' as the URL of the LDAP
    server/port
    ```

    Enter a base object for searches in the LDAP server. The base object is the point in the LDAP tree at which you want users to start searching (in this case, to start searching for certificates). There are no strict rules about the syntax for this value. Enter the base object string exactly as it was specified in the LDAP server tree.

    ```
    Enter a base object for search in LDAP server. [?,q]:
    o=mydomain.com
    ```

    For example, you could enter a value such as `o=mydomain.com`, or a value such as `o=trixie@trixieweb.com`.

    Note: This prompt is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

17. The installation program displays a confirmation message for the value you entered:

    ```
    Using 'o=mydomain.com' as the base object
    ```

    Note: This message is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

18. Enter the location for the LDAP filter file. This file is used to define search filters that can further refine the scope of searches in the LDAP server tree. For more information, see *Using Security* in the WebLogic Enterprise online documentation.

    ```
    Location and name of LDAP filter file. (default:
    /usr/local/wledir/udataobj/security/bea_ldap_filter.dat) [?,q]:
    ```

    The file's default location is shown. Press the Enter key to accept this default; or enter a new value and click Enter.

    Note: This prompt is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

19. The installation program displays a confirmation message for the value you entered:

```
Using
'file:///usr/local/wledir/udataobj/security/bea_ldap_filter.dat
' as the location and name of LDAP filter file
```

Note: This message is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

20. The installation program then completes the installation and displays confirmation messages:

```
Registering SSL plug-in...
... finished
```

Note: The `Registering SSL...` message is not displayed if the system only has Tuxedo server or client software from a WebLogic Enterprise 5.1 software installation.

```
Changing file permissions...
... finished

Installation of BEA Encryption Package 56 For WLE was successful

Please don't forget to fill out and send in your registration
card
```

Removing (Uninstalling) the WebLogic Enterprise Encryption Package Software from Your System

To remove either the WebLogic Enterprise 56-bit or 128-bit Encryption Package software from your UNIX system, you must:

1. Uninstall the WebLogic Enterprise 5.1 software, as explained in the section "Removing (Uninstalling) the WebLogic Enterprise Software from Your System" on page 3-19.

   This also removes the WebLogic Enterprise Encryption Package software, if present.

2. Then re-install the WebLogic Enterprise 5.1 software.

Part V BEA Jolt Installation

14 Preparing to Install BEA Jolt

This chapter provides information on the preparations you need to make prior to installing BEA Jolt, hereafter designated as Jolt. The following topics are discussed in this chapter:

- What's New in Jolt
- What's Changed in Jolt
- System Requirements
- Release Migration/Interoperability
- Jolt ASP Connectivity for BEA Tuxedo
- Preinstallation Checklist

What's New in Jolt

The following features are new to Jolt:

- **Compression**—Allows application data that is sent between a Jolt client and a Jolt Server (JSH) to be compressed during transmission over the network at a very low cost (few CPU cycles). Compression is only supported for clients based on JDK 1.1.7 or 1.2.

- **Diffie-Hellman (DH) Key Exchange**—Replaces the DES key exchange mechanism. This allows Jolt to be classified as a true 128 bit secure environment (available to U. S. customers only).
- **Two Session Keys per Jolt Session**—Jolt uses two session keys for each user session. One key is used for encrypting and decrypting messages sent from the client to the server, the other for messages sent from the server to the client.
- **Support for WebLogic Enterprise 5.1** —WebLogic Enterprise 5.1 provides advanced Java development services. It allows you to build distributed, mission-critical, CORBA-compliant applications in Java and C++.
- **JRLY as an NT Service**—The Jolt Relay (JRLY) in Jolt on the NT platform is provided as an NT service. As an NT service, this process can be started and stopped via the NT Service Control Manager (SCM).
- **JRLY Connection to JRAD**—The Jolt Relay (JRLY) in Jolt allows you to specify a list of IP addresses for JRADs. On startup, the JRLY tries to connect to each JRAD on the list, searching sequentially from the beginning. The first JRAD to respond successfully is used.
- **Multiple JSL Addresses for JoltSessionAttributes**—Jolt allows you to specify a list of IP port addresses from which the Jolt client randomly selects JSLs until a connection is established.
- **ASP Connectivity for BEA Tuxedo** (formerly Jolt WAS for IIS)—Works with existing Microsoft Internet Information Server (IIS) to provide a gateway for HTML clients into a BEA Tuxedo application environment. Interactions between the Web server and Jolt classes are through VBScript and VB inside ASPs.
- **JSE Connectivity for BEA Tuxedo** (formerly Jolt WAS for Servlets)—Simplifies handling of HTTP requests to the BEA Tuxedo application environment.
- **Internationalization**—Allows all informational and error messages that are generated by the Jolt client to be localized.
- **Javadoc Format**—The HTML and PDF versions of the Jolt class library are now in Javadoc format.
- **Y2K Compliance**—Any dates that are used or displayed by Jolt are in Y2K-compliant format. Specifically, the Jolt license file allows expiration dates beyond December 31, 1999 and all messages and timestamps that Jolt generates use a Y2K-compliant representation.

What's Changed in Jolt

- **BEA Tuxedo/WebLogic Enterprise Version** — Jolt 1.2 for WebLogic Enterprise 5.1 only works with WebLogic Enterprise 5.1.
- **Client/Server Interoperability**—Jolt provides some client/server interoperability. While you must upgrade all server-side components together, you do not have to upgrade client components at the same time. A Jolt 1.1 client and Jolt 1.2 server interoperate, but the client has only 1.1 functionality; server components have additional functionality. However, a Jolt 1.2 client cannot operate with a Jolt 1.1 server.
- **ASP Connectivity for BEA Tuxedo**—The name of Jolt Web Application Server (WAS) has changed to ASP Connectivity for BEA Tuxedo to emphasize the Microsoft ASP environment. Also, ASP Connectivity for BEA Tuxedo is no longer an add-on; it is part of the Jolt Client Class Library.
- **JSE Connectivity for BEA Tuxedo**—The name of Jolt WAS for Servlets is now JSE Connectivity for BEA Tuxedo.
- **JoltBeans—**This feature is no longer an add-on; it is part of the Jolt Client Class Library.
- **Security/Encryption—**Diffie-Hellman (DH) key exchange replaces the DES key exchange mechanism (for U. S. customers only).
- **Digital Alpha NT—**Is no longer supported.

System Requirements

The following hardware and software components are required before you can install Jolt.

WebLogic Enterprise

If you plan to use Jolt with WebLogic Enterprise, you must have WebLogic Enterprise 5.1 installed before you install Jolt.

Web Servers Supported

To provide HTTP/HTML-based access to enterprise applications, Jolt supports the Microsoft Internet Information Server (IIS) or Java Web Server.

Supported Platforms for Jolt Server

Jolt server platform support depends upon BEA Tuxedo version support, as stated earlier in this chapter. The Jolt server also requires:

- CD-ROM access
- 500K of disk space

Table 14-1 shows the supported platforms for the Jolt server.

Table 14-1 Supported Platforms for Jolt Server

Operating System Vendor	Operating System	Operating System Version	BEA Tuxedo Version Supported	WebLogic Enterprise Version Supported
Digital Equipment Corporation (DEC)	Digital UNIX	4.0d	6.5 only	
DEC	Digital UNIX	4.0e		4.2
Hewlett-Packard (HP)	HP-UX	10.20	6.4 and 6.5	4.2
HP	HP-UX	11.0	6.4 and 6.5	4.2

Table 14-1 Supported Platforms for Jolt Server (Continued)

Operating System Vendor	Operating System	Operating System Version	BEA Tuxedo Version Supported	WebLogic Enterprise Version Supported
International Business Machines (IBM)	AIX	4.2.1 (RS/6000)	6.4 and 6.5	
IBM	AIX	4.3.1 (RS/6000)	6.4 and 6.5	
IBM	AIX	4.3.2		4.2
IBM	OS/390	V2R6	6.5 only	
IBM	OS/400	4.1 (RISC)	6.5 only	
Microsoft	Windows NT	4.0 (sp4)	6.4 and 6.5	4.2
Red Hat	Linux	5.2	6.5 only	
Santa Cruz Operation (SCO)	Unixware	7.0	6.5 only	
Sequent	Dynix/PTS	4.4.2	6.5 only	4.2
SGI (Silicon Graphics)	IRIX	6.4 -o32	6.4 and 6.5	
SGI	IRIX	6.5 -n32	6.5 only	4.2
Sun	Solaris	2.5.1 (SPARC)	6.4 and 6.5	
Sun	Solaris	2.5.1 (Intel)	6.4 and 6.5	
Sun	Solaris	2.6 (SPARC)	6.4 and 6.5	4.2
Sun	Solaris	2.6 (Intel)	6.4 and 6.5	
Sun	Solaris	2.7 (SPARC)	6.5 only	4.2
Sun	Solaris	2.7 (Intel)	6.5 only	
Siemens Nixdorf (SNI)	Reliant UNIX	5.4.4b	6.5 only	

Supported Platforms for Jolt Relay

Table 14-2 shows the supported platforms for Jolt Relay:

Table 14-2 Supported Platforms for Jolt Relay

Operating System Vendor	Operating System	Operating System Version
DEC	Digital Tru64 UNIX	4.0f (Alpha)
HP	HP-UX	11.00
IBM	AIX	4.3.3
Microsoft	Windows NT	4.0 (Intel) (sp4)
Sun	Solaris	2.6 (SPARC)

Client Support

Jolt 1.2 supports Java applets and standalone Java client applications for BEA Tuxedo. The following table shows the client types supported by Jolt 1.2.

Table 14-3 Client Types Supported by Jolt 1.2

Client Type	Supports	Version Supported
Java Applet in a Browser	Microsoft Internet Explorer	Internet Explorer (IE) 4.0, 5.0
	Netscape	Netscape Communicator 4.7
Standalone Applications on a Desktop	Java	JDK 1.1.7, 1.2.2

The HTML-based Jolt Client Classes run inside a Web server. The following Web servers are certified with Jolt.

Table 14-4 Web Servers Certified With Jolt

Vendor	Web Server Version	OS Version	Jolt Client Personality	Comments
Microsoft	IIS 4.0x	Windows NT 4.0	ASP Connectivity for BEA Tuxedo	Supports VB or VBScript-based applications inside ASPs.
BEA WebXpress	WebLogic (WLX and/or WLS) 5.xx	Any	WebLogic Connectivity for BEA Tuxedo	Supports servlets. Backward-compatible only - You can have a Jolt 1.2 server with a Jolt 1.1 client.
Any	Java Servlet Engine (Any version)	Any OS running JDK 1.1.7	JSE Connectivity for BEA Tuxedo	Supports servlets.

Jolt Client Requirements

Jolt has the following client requirements:

- 574K of disk space for client classes.
- 1364K of disk space for client API documentation.
- 190K of disk space for client examples.
- Java Developer's Kit (JDK) 1.1.7 or 1.2.2 is certified for Jolt 1.2 application development. Jolt 1.1 uses JDK 1.1.5 or 1.1.6. (http://java.sun.com/java.sun.com/products/JDK/index.html)
- Java-enabled browser (Internet Explorer) or Java Virtual Machine (JVM).

Jolt Client Class Library

Various implementations of Java tend to show minor differences in characteristics. Jolt 1.2 is based on the 1.1.7 JDK. The Jolt 1.2 class library is compatible with JDK versions 1.1.7 and 1.2.2 on the following operating systems:

- Solaris 2.5.1, 2.6, and 2.7
- Windows NT 4.0
- Windows 95 and 98

The Jolt class library is compatible with the browsers and JDK versions shown in Table 14-5.

Table 14-5 Jolt Class Library Compatibility

Vendor	Browser/Version	Java Virtual Machine (JVM)	OS Version
Microsoft	Internet Explorer 4.0.1 (sp1)	MS JVM 4.0	Windows NT 4.0 Service Pack 4
Microsoft	Internet Explorer 5.0	MS JVM 4.0	Windows NT 4.0 Service Pack 4
Netscape	Communicator 4.7	JDK 1.1.5	Windows NT 4.0

Release Migration/Interoperability

If you have Jolt 1.1 installed, we recommend that you uninstall it before you install Jolt 1.2.

Jolt provides increased interoperability between versions. In the Jolt 1.2 release, however:

- You must upgrade all server-side components together.

- If you have Jolt 1.1 applications, only Jolt 1.1 functionality is available to the Jolt 1.1 client, even though the server-side components have additional functionality when they are upgraded to Jolt 1.2.
- A Jolt 1.2 client cannot operate with a Jolt 1.1 server.

Jolt ASP Connectivity for BEA Tuxedo

Requirements

Before you install Jolt ASP Connectivity for BEA Tuxedo, you must have the following software installed:

- Windows NT Server 4.0 with NT Option Pack
- Microsoft IIS 4.0
- WebLogic Enterprise 5.1

Installation Instructions

Note: These instructions are documented from the Microsoft standard. Check the Microsoft documentation for updates.

To install Jolt ASP Connectivity for BEA Tuxedo:

1. Remove any files that you copied when you installed the Jolt 1.1 WAS package.
2. Install the Microsoft Java Component Framework from the IIS 4.0 SDK (if it is not already installed).
3. Create a new directory, `aspcomp` in the `java\Trustlib` directory. (This is most typically found in `%windir%\java\TrustLib`).

   Since the framework files have been created in a package called `aspcomp`, the Java Virtual Machine (JVM) expects to find them there.

The Microsoft Java Component Framework files are typically found in: `C:\InetPub\iissamples\sdk\components\java\Framework`

4. Copy the framework class files to the newly created

   `java\TrustLib\aspcomp` directory.

   (You only need to copy the *.class files.)

5. Install the latest Jolt 1.2 classes in the Windows NT server `java\Trustlib` directory.

   Contact BEA Customer Support for the latest Jolt 1.2 patch files.

6. Copy the class subdirectories and files (or unzip jolt.zip) from the Jolt 1.2 for WebLogic Enterprise 5.1 client distribution into your `java\lib` directory. The Jolt 1.2 classes have been created in packages beginning with "bea" so the JVM expects to find them in the `java\lib\bea\...` subdirectories.

   Install the corresponding Jolt 1.2 patch files on your BEA Tuxedo server if you have not already done so.

7. Install the Web Application Services classes in the Windows NT server

   `java\Trustlib` directory.

8. Unzip `joltjsp.jar` to create the class files in your `java\trustlib` directory.

   Make sure you expand the files using the subdirectory folders in the zip archive.

   The Web Application Services classes are created in packages beginning with "bea" so the JVM will expect to find them in the `java\Trustlib\bea\...` subdirectories.

9. Register the Web Application Service classes as ActiveX components.

   Run the `wasreg.cmd` command file to register the BEA Web Application Services java classes as BEAWEB ActiveX components. This enables the BEAWEB components to be accessible from the Microsoft ASP scripts.

```
wasreg.cmd file list

@echo off

REM
REM This batch command file registers the necessary java
REM classes as ActiveX components so that they are accessible
REM from Active Server Pages or any other ActiveX client.
REM The classes (or equivalent zip file) must exists
REM in your java/Trustlib directory (normally C:\%WINDIR%\java\Trustlib.
```

```
REM
javareg /q /register /class:bea.jolt.pool.asp.UserInfo/progid:BEAWEB.UserInfo
javareg
/q/register/class:bea.jolt.pool.asp.SessionPoolManager/progid:BEAWEB.SessionPoolManage
r
javareg /q /register /class:bea.jolt.pool.asp.Template/progid:BEAWEB.Template
javareg /q /register /class:bea.jolt.pool.asp.TemplateData/progid:BEAWEB.TemplateData


REM
REM These are the new ActiveX component names.
REM
javareg /q /register /class:bea.jolt.pool.UserInfo/progid:BEAJOLTPOOL.AspUserInfo
javareg /q /register
/class:bea.jolt.pool.asp.AspPoolManagerConfig/progid:BEAJOLTPOOL.AspPoolManagerConfig
javareg /q /register
/class:bea.jolt.pool.asp.AspSessionPoolManager/progid:BEAJOLTPOOL.AspSessionPoolManage
r
javareg /q /register
/class:bea.jolt.pool.asp.AspTemplate/progid:BEAJOLTPOOL.AspTemplate
javareg /q /register /class:bea.jolt.pool.asp.AspDataSet/progid:BEAJOLTPOOL.AspDataSet


REM
REM These are the new ActiveX component names.
REM
javareg /q /register /class:bea.jolt.pool.UserInfo/progid:BEAJOLTPOOL.AspUserInfo
javareg /q /register
/class:bea.jolt.pool.asp.AspPoolManagerConfig/progid:BEAJOLTPOOL.AspPoolManagerConfig
javareg /q /register
/class:bea.jolt.pool.asp.AspSessionPoolManager/progid:BEAJOLTPOOL.AspSessionPoolManage
r
javareg /q /register
/class:bea.jolt.pool.asp.AspTemplate/progid:BEAJOLTPOOL.AspTemplate
javareg /q /register /class:bea.jolt.pool.asp.AspDataSet/progid:BEAJOLTPOOL.AspDataSet
References
```

Refer to the online Microsoft NT Option Pack Product Documentation, especially the Microsoft Internet Information Server (IIS) chapters.

Preinstallation Checklist

Before you install Jolt, check the following:

- Back up your existing `CATNAMES, jrepository` and `jrly.config` files.
- Uninstall previous version of Jolt, if applicable. Note that you can install all Jolt 1.2 components at once or separately, in the same or different directories. However, a single uninstall removes everything: files, directories and registry entries.
- Verify that you have WebLogic Enterprise 5.1 installed, if applicable.
- Determine the location of the BEA Tuxedo directory where the Jolt server is to be installed.
- Determine the location of the directory where the Jolt documentation is to be installed.
- Determine the Web server location where the Jolt client components are to be installed.
- Verify the user ID and group ID assigned to Jolt server files (on UNIX).
- Verify the user ID and group ID to be assigned to Jolt client files (on UNIX).
- Review the *BEA Jolt Release Notes* and the Jolt Product Page (http://www.beasys.com) for any new information .

Caution: Jolt 1.2 automatically installs two Microsoft dynamic link libraries (DLLs), `MSVCRT.DLL` and `MFC42U.DLL` and overwrites older versions of these libraries. Before you begin installation, check whether older versions of these dynamic link libraries already exist. If they do exist and you do not want them to be overwritten, back them up.

15 Installing BEA Jolt

This chapter explains how to install the BEA Jolt software.

This chapter includes the following sections:

- Microsoft Windows NT Installation Instructions
- UNIX System Installation Instructions
- Licensing Jolt for WebLogic Enterprise 5.1

Microsoft Windows NT Installation Instructions

The installation (`setup.exe`) is launched automatically when you insert the Jolt Installation CD and provides a set of step-by-step installation windows to help you quickly install your Jolt product. These windows are self-explanatory.

You can cancel the installation at any time. (If your system detects the presence of a previous Jolt installation, you are given the option of aborting the current installation or overwriting the existing one.)

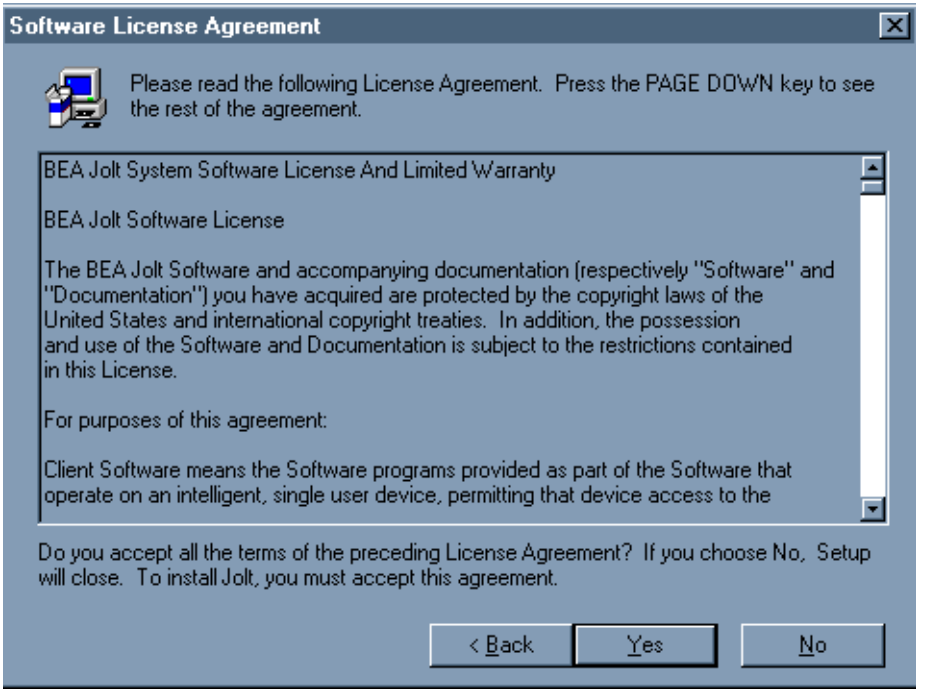
1. When you see the Welcome window shown in Figure 15-1, click the **Next** button to proceed with the installation.

Figure 15-1 Jolt Welcome Window

2. The next window that appears is the **Software License Agreement** (Figure 15-2). Use the scroll bar or the **Page Down** key to read the Software License Agreement.

   To continue with the Jolt installation, you must accept the terms of the license agreement. If you accept the terms, click the **Yes** button to continue with the installation. If you do not accept the terms, click the **No** button and the installation stops.

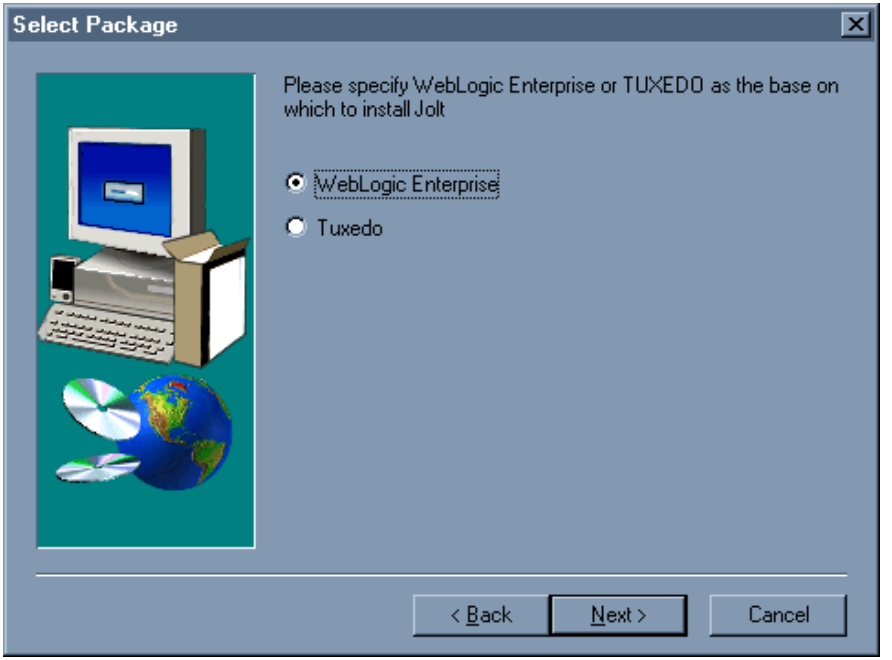
Figure 15-2 Software License Agreement Window



3. To install Jolt, you must have either WebLogic Enterprise 5.1 already installed. If you have *both* BEA Tuxedo and WebLogic Enterprise installed, the **Select Package** window (Figure 15-3) appears.

   Click either the BEA Tuxedo or WebLogic Enterprise radio button to select the base on which to install Jolt.

Figure 15-3 Select Package Window



4. If you have either BEA Tuxedo or WebLogic Enterprise installed, the **Select Components** window appears (Figure 15-4).

   In the **Select Components** window, select the module(s) you want to install. (You can choose to install any or all components.) The sample window shown in Figure 2-4 displays BEA Tuxedo components. If you install on WebLogic Enterprise, the server component listed would show “Jolt Server for WLE” instead of “Jolt Server for Tuxedo.”

Note: Selection in this window works as a toggle. To make your selection, click in the check box to the left of the text representing your choice. The window displays a checkmark to the left of your selection. To deselect a component, click on the checkmark to the left of your choice and the checkmark is removed.

Table 15-1 displays what Jolt installs with each selected component.

You can check the available and required disk space on a particular drive either in the **Space Available** section at the bottom of the **Select Component** window,

or by clicking on **Disk Space** in the same window. The **Space Required** number is approximately equal to the space required by the total number of components you select plus a core component (uninstall files).

The **Destination Folder** displays the directory where the Jolt components are installed. To change the directory, click the **Browse** button and type the directory path. You have another opportunity to specify the Destination Folder when you select the Jolt components for installation (Step 5).

Note: Typically, the destination path is the BEA Tuxedo or WebLogic Enterprise directory.

Click the **Next** button to continue with the installation.

Figure 15-4 Select Components Window

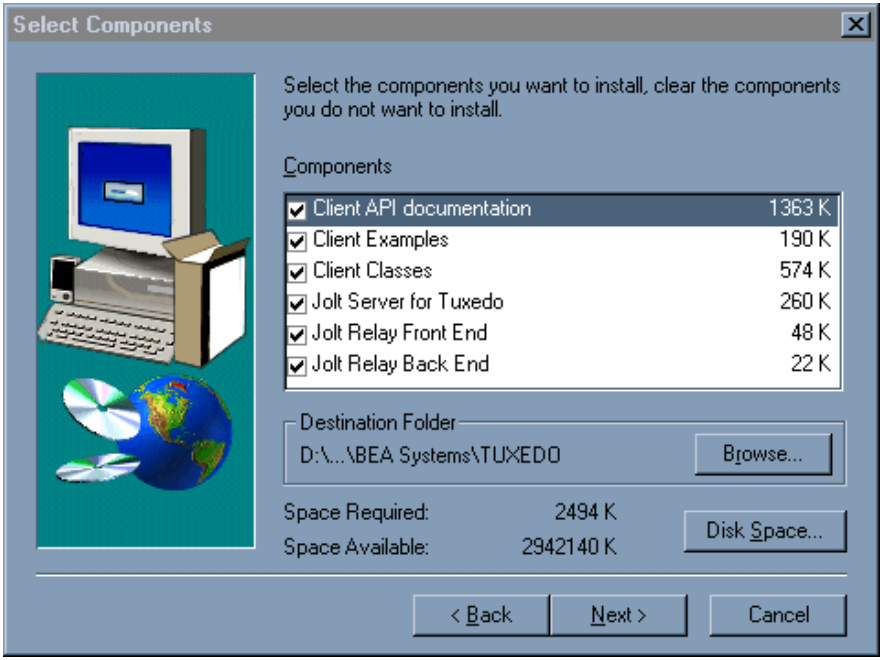


Table 15-1 describes what gets installed with each component.

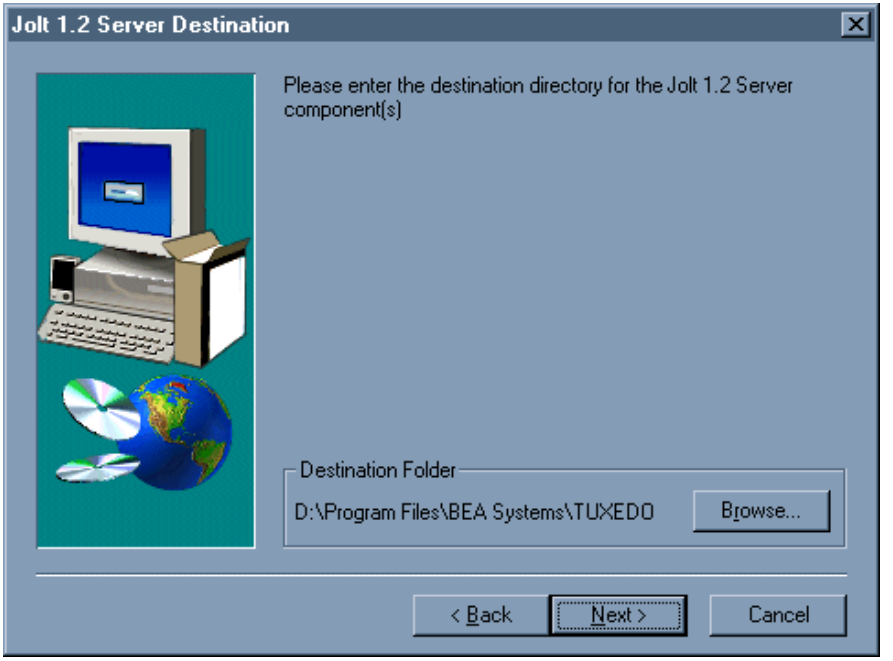
Table 15-1 What Gets Installed with Each Component

Component...	Installs...
Client API Documentation	Javadoc Language Reference documentation only
Client Examples	Client Examples only
Client Classes	Client classes (including JoltBeans) only
Jolt Server for WebLogic Enterprise	Jolt server only (review license)
Jolt Relay Front-End	Jolt Internet Relay front-end server
Jolt Relay Back-End	Jolt Internet Relay back-end server

5. A Component Destination window appears for each component you have chosen to install, that is, each component that you checked in the **Select Component** window. (Figure 15-5 displays the **Server Destination** window.) In each Component Destination window, check that the **Destination Folder** is where you want the component installed. If it is not, click on the **Browse** button and change it.

   Click on the **Next** button.

Figure 15-5 The Server Destination Window

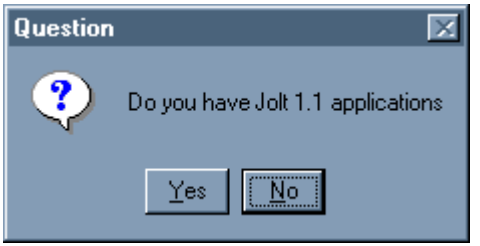


6. A prompt (Figure 15-6) asks if you have Jolt 1.1 applications.

   If you click the **Yes** button, in addition to the client class `.jar` files, you also get client classes in `.zip` file format and all Jolt client classes in the `<classes/bea/jolt>` directory.

   If you click the **No** button, you get only Jolt client class `.jar` files.

Figure 15-6 Jolt 1.1 Applications

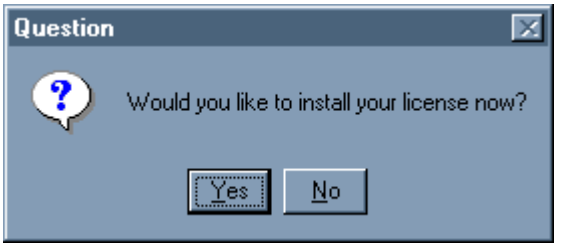


7. After the selected modules are installed, you are prompted (Figure 15-7) to install your Jolt license.

   If you click the Yes button, the **Insert License Disk** window (Figure 2-8) displays.

   If you click the **No** button, a warning reminds you that your license has not been installed. For further information on licensing, see the "Licensing Your Jolt Software" section later in this chapter.

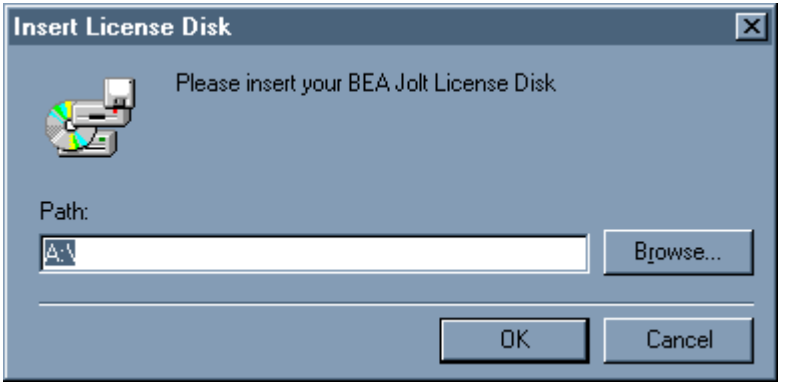
Figure 15-7 Install License Window



8. If you choose to install your license, the **Insert License Disk** window shown in Figure 15-8 displays and you are prompted to insert your license disk.

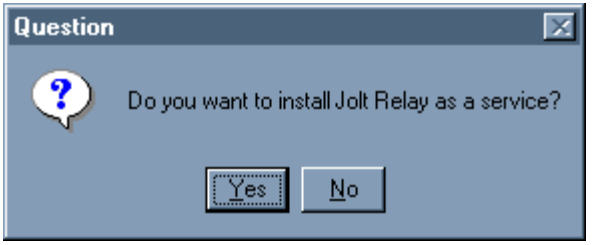
   Type the designated path or click the **Browse** button to change the drive, then click the **OK** button.

Figure 15-8 Insert License Disk Window



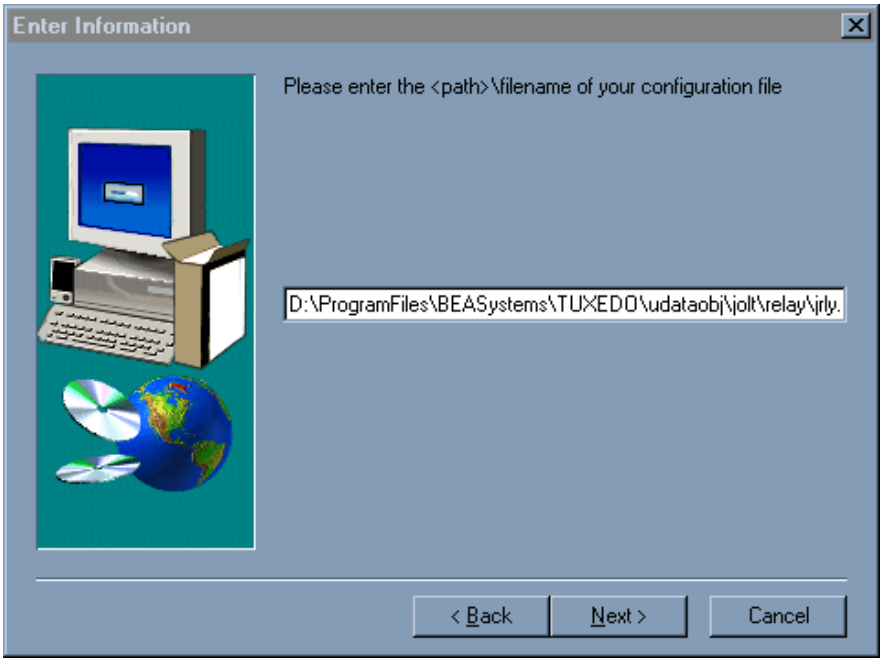
9. If you chose to install the Jolt Relay Front End in the **Select Component** window (Figure 15-4), a prompt asks if you want to install Jolt Relay as a service (Figure 15-9). If you click on the **Yes** button, the **Enter Information** (Figure 15-10) window appears. If you click on the **No** button, the **Setup Complete** (Figure 15-11) window appears.

Figure 15-9 Install Jolt Relay Window



10. Enter the path for your configuration file. Click on the **Next** button.

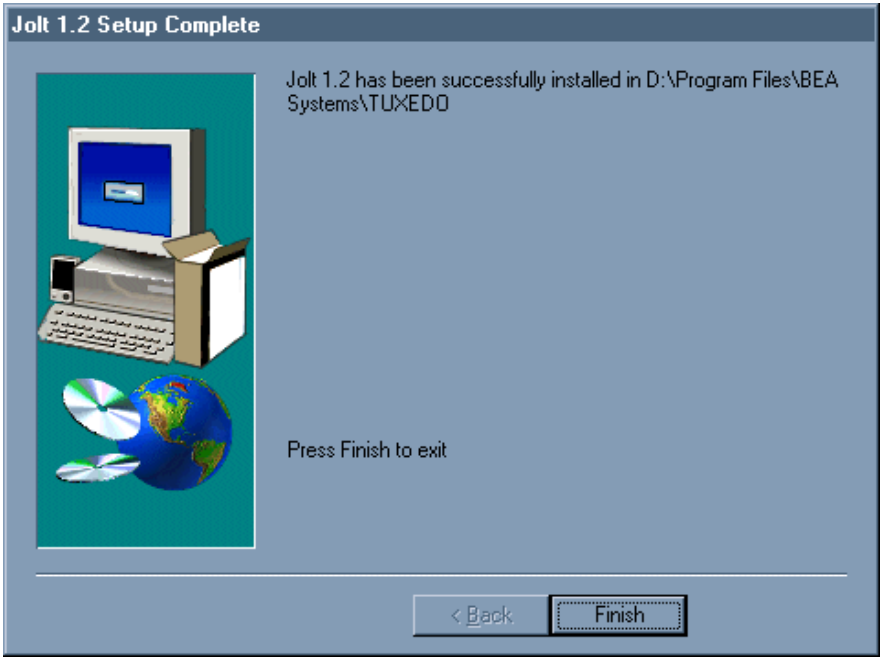
Figure 15-10 The Enter Information Window



11. When all files are installed, the **Setup Complete** (Figure 15-11) window displays.

    Click on **Finish**. Jolt is installed.

Figure 15-11 Setup Complete Window



UNIX System Installation Instructions

The Jolt installation shell script for UNIX and Linux systems includes all components necessary for installing the Jolt system: the Jolt Repository, the Jolt Server, the Jolt Relay front-end and back-end, and the Jolt Class Library.

Invoking the UNIX Installation Script

Before you install Jolt, make sure that WebLogic Enterprise 5.1 has been installed. (If your system detects the presence of a previous Jolt installation, you are given the option of aborting the current installation or overwriting the existing one.)

1. Log in as a user who has write permission in the BEA Tuxedo directory.
2. Insert the CD-ROM in the CD-ROM drive. If you are running on Solaris and the `daemon /usr/sbin/vold` is running, the CD-ROM should be automatically mounted in the `/cdrom/JOLT` directory.

   ```
   cd /cdrom/jolt/unix
   ```

   If you are not running on Solaris or `vold` is not running, consult your UNIX administration documentation to mount the CD-ROM.
3. Type `ls`

   The directory contents should look similar to the following sample. If not, verify that you are installing the correct CD-ROM.

   ```
   hp/ibm/
   install.sh
   /sun5x/alpha
   ```
4. Type `install.sh`
5. Press **Enter**.

   This invokes the Jolt installation script. The step-by-step install screens are described in the following section.

Unix/Linux System Installation Script

The UNIX system installation script provides a set of step-by-step instructions to help you quickly install your Jolt product. This script lets you specify your platform, operating system, and other installation details. The installation script prompts you through the entire installation process. You can cancel the installation at any time by pressing **CTRL-C** simultaneously.

Note: The script used to show the UNIX installation is taken from Jolt 1.2 for WebLogic Enterprise 5.1.

```
The following installation options are available:

  1     WLE             Install Jolt for WLE

Select an option (default: Tuxedo) [?,??,q]: 1


 01) alpha/tru64/Wle5.1           02) hp/hpux11/Wle5.1

 03) ibm/aix43/Wle5.1             04) sun/sol26/Wle5.1


Install which platform's files? [01-04, q to quit, l for list]: 04

BEA Jolt Release 1.2

This directory contains the BEA Jolt System for

SunOS 5.6 (Solaris 2.6) on SPARC

Is this correct? [y,n,q]: y


To terminate the installation at any time press the interrupt key,
typically <del>, <break>, or <ctrl+c>.

The following packages are available:

  1     jolt            BEA Jolt

Select the package(s) you wish to install (or 'all' to install all
packages) (default: all) [?,??,q]: 1


BEA Jolt  (sparc) Release 1.2
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Inc.
BEA WebLogic Enterprise is a trademark of BEA Systems, Inc.

The following installation options are available:


 1  all                     Install Jolt server, relay, rad,
                            and client

 2  server                  Install the server only
```

```
 3  relay                    Install the relay front-end only

 4  rad                      Install the relay back-end only

 5  client                   Install the client only

 6  compat                   Install the Jolt 1.1 Client
                             compatibility classes


Select an option (default: all) [?,??,q]: 1


Note that the jolt server will be installed into an existing TUXEDO
or WLE directory. You MUST have previously installed TUXEDO version
6.4 or 6.5 or WLE 4.2 to attempt this installation.

Base directory of existing TUXEDO installation [?,q]:
/usr/jolt/W5.1u

Determining if sufficient space is available ...
3068 blocks are required
1045034 blocks are available to /usr/jolt/W5.1u

Using /usr/jolt/W5.1u as the TUXEDO base directory

Unloading
/cdrom/cdrom0/jolt/unix/sun5x/sol26/Wle5.1/jolt/joltclt.Z ...
udataobj/jolt/jolt.jar
udataobj/jolt/joltasp.jar
udataobj/jolt/joltjse.jar
udataobj/jolt/JoltBeanDev.jar
udataobj/jolt/JoltBeanDevAwt.jar
udataobj/jolt/JoltBeanDevSwing.jar
udataobj/jolt/JoltBeanDevSwing11.jar
udataobj/jolt/JoltBeanRt.jar
udataobj/jolt/JoltBeanRtAwt.jar
udataobj/jolt/JoltBeanRtSwing.jar
udataobj/jolt/JoltBeanRtSwing11.jar
udataobj/jolt/RE.html
udataobj/jolt/examples/asp/bankapp/templates/deposit.temp
udataobj/jolt/examples/asp/bankapp/templates/inquiry.temp
udataobj/jolt/examples/asp/bankapp/templates/transfer.temp
udataobj/jolt/examples/asp/bankapp/templates/withdrawal.temp
udataobj/jolt/examples/asp/bankapp/templates/error.temp
udataobj/jolt/examples/asp/bankapp/templates/nosession.temp
udataobj/jolt/examples/asp/bankapp/templates/syserror.temp
udataobj/jolt/examples/asp/bankapp/bankapp.properties
```

```
udataobj/jolt/examples/asp/bankapp/depositForm.htm
udataobj/jolt/examples/asp/bankapp/inquiryForm.htm
udataobj/jolt/examples/asp/bankapp/transferForm.htm
udataobj/jolt/examples/asp/bankapp/withdrawalForm.htm
udataobj/jolt/examples/asp/bankapp/tellerForm.asp
udataobj/jolt/examples/asp/bankapp/tlr.asp
udataobj/jolt/examples/asp/bankapp/web_templates.inc
udataobj/jolt/examples/asp/bankapp/web_admin.inc
......
udataobj/jolt/classes/bea/jolt/ServiceException.class
udataobj/jolt/classes/bea/jolt/Session.class
udataobj/jolt/classes/bea/jolt/SessionException.class
udataobj/jolt/classes/bea/jolt/SessionState.class
udataobj/jolt/classes/bea/jolt/Transaction.class
udataobj/jolt/classes/bea/jolt/TransactionException.class
udataobj/jolt/classes/bea/jolt/UrlHdlr.class
udataobj/jolt/classes/bea/jolt/UrlInfo.class
udataobj/jolt/jolt.zip

910 blocks
... finished


Unloading /cdrom/cdrom0/unix/sun5x/sol26/Tux6.4_6.5/jolt/joltrad.Z
...
bin/JRAD
locale/CATNAMES
locale/C/JRAD_CAT
locale/C/JRAD.text
140 blocks


... finished

Unloading /cdrom/cdrom0/unix/sun5x/sol26/Tux6.4_6.5/jolt/joltsvr.Z
...
bin/JREPSVR
bin/JSL
bin/JSH
lib/libjconv.so
include/jotypes.h
locale/CATNAMES
locale/C/JOLT_CAT
locale/C/JOLT.text
udataobj/jrep.f32
udataobj/jwsladmin.f32
udataobj/jolt/repository/jrepository
760 blocks
... finished
```

```
Please don't forget to manually append the contents of the license
file
from the enclosed floppy to '/usr/jolt/W5.1u/udataobj/lic.txt'.
Refer to the BEA Jolt manual for details on how to do this.

Changing file permissions...
... finished

Installation of BEA Jolt was successful

The following packages are available:

  1     jolt            BEA Jolt

Select the package(s) you wish to install (or 'all' to install
all packages) (default: all) [?,??,q]: q
```

Licensing Jolt for WebLogic Enterprise 5.1

The licensing scheme used by Jolt depends on the version of BEA Tuxedo used with Jolt. You need the following information to install your license:

- The version of BEA Tuxedo you are installing.
- Your BEA Tuxedo directory (`TUXDIR`) from the installation. This is the directory that contains the BEA Tuxedo directories (`bin`, `udataobj`, etc.).
- Your license file

Jolt for WebLogic Enterprise 5.1 uses a digitally signed license file to enable a license. This file is provided on a floppy disk shipped with your Jolt software.

The UNIX installation program (`install.sh`) does not install the license automatically; see the "UNIX Licensing Instructions" in the following section.

The NT installation program (`setup.exe`) prompts you for the location of the Jolt license file. When you provide the necessary information, the installation program installs the license file for you. If you do not install the license file during installation, follow the steps in the "NT Licensing Instructions" section.

UNIX Licensing Instructions

1. Identify your current BEA Tuxedo license file. This is located in `$TUXDIR/udataobj/lic.txt`.
2. Make a copy of this file:

   ```
   cd $TUXDIR/udataobj
   cp lic.txt lic.txt.bak
   ```

3. Check that you have completed Step 2. Verify the copy using OS-specific commands (e.g., `diff` on UNIX systems).
4. Append the contents of the Jolt license file to the BEA Tuxedo license file:

   ```
   cat /dev/diskette/joltlic.txt >> lic.txt
   ```

NT Licensing Instructions

1. Identify your current BEA Tuxedo license file. This is located in `%TUXDIR%\udataobj\lic.txt`.
2. Make a copy of this file:

   ```
   cd %TUXDIR%\udataobj
   copy lic.txt lic.txt.bak
   ```

3. Check that you have a completed Step 2. Verify the copy using OS-specific commands.
4. Append the contents of the Jolt license file to the BEA Tuxedo license file:

   ```
   copy lic.txt + a:\joltlic.txt
   ```

   A text editor can be used to copy and paste the contents of the Jolt license file into the BEA Tuxedo license file.

   Note: The digital signature is 64 characters long. Every character must match exactly or the license is not valid.

CHAPTER

16 Configuring the BEA Jolt System

This chapter explains how to configure BEA Jolt. It contains a "Quick Configuration" section for users who are familiar with Jolt. The rest of the chapter provides more detailed information. It is presumed that readers of this chapter are system administrators or application developers who have experience with the operating systems and workstation platforms on which they are configuring Jolt.

This chapter includes the following sections:

- Quick Configuration
- Jolt Background Information
- Jolt Relay
- Jolt Relay Adapter
- Jolt Repository
- Event Subscription
- BEA Tuxedo Background Information
- Sample Applications in Jolt Online Resources

Quick Configuration

If you are already familiar with Jolt and BEA Tuxedo, this section provides a quick guide to the configuration procedure. If you have not used Jolt before, read the "Jolt Background Information" section in this chapter.

Configure Jolt on BEA Tuxedo

Follow the directions in this section to configure the Jolt Server Listener (JSL).

Edit the UBBCONFIG file

1. In the `MACHINES` Section, specify `MAXWSCLIENTS=`*`number`* (Required).

Note: If `MAXWSCLIENTS` is not set, JSL does not boot.

2. In the `GROUPS` section, set `GROUPNAME` <*`required parameters`*> [*`optional parameters`*].

3. Set the `SERVERS` section (Required).

   Lines within this section have the form:

   `JSL` <*`required parameters`*> [*`optional parameters`*]

   where `JSL` specifies the file (*`string_value`*) to be executed by `tmboot(1)`.

4. Set the required parameters for `JSL`.

   Required parameters are:

   `SVRGRP`, `SVRID`, and `CLOPT="-A...-n...//`<*host port*>`"`

5. Set other parameters for `JSL`.

   The following parameters can be used with the JSL, but you need to understand how doing so would affect your application. See "Other Parameters Usable With JSL" later in this chapter.

   `SVRGRP=`*`string_value`*

   `SRVID=`*`number`*

MAX # of JSHs

MIN # of JSHs

Configure the Jolt Repository

In the GROUPS section:

1. Specify the same identifiers given as the value of the LMID parameter in the MACHINES section.
2. Specify the value of the GRPNO, between 1 and 30,000.

In the SERVERS section:

The Jolt Repository Server (JREPSVR) contains services for accessing and editing the Repository. Multiple JREPSVR instances share repository information through a shared file. Include JREPSVR in the SERVERS section of the UBBCONFIG file.

1. Indicate a new server identification with the SRVID parameter.
2. Specify the -W flag for one (and only one) JREPSVR to ensure that you can edit the Repository. (Without this flag, the Repository is read-only.)
3. Type the -P flag to specify the path of the repository file. (An error message displays in the BEA Tuxedo ULOG file if the argument for the -P flag is not entered.)
4. Add the file pathname of the Repository file (for example, /app/jrepository).
5. Boot the BEA Tuxedo system using the tmloadcf and tmboot commands.

Initialize Services Using BEA Tuxedo and the Repository Editor

You must initially define the BEA Tuxedo services using BEA Tuxedo and Jolt in order to make the Jolt services available to the client.

1. Build the BEA Tuxedo server that contains the service.
2. Access the Jolt Repository Editor.

Before You start the Repository Editor

Before you start the Repository Editor, make sure that you have installed all necessary Jolt software. You cannot use the Repository Editor until `JREPSVR` and `JSL` are running.

Start the Repository Editor from either the JavaSoft `appletviewer` or from your Web browser.

Starting the Repository Editor Using appletviewer:

1. Set the CLASSPATH to include the Jolt class directory or the directory where the `*.jar` files reside.
2. If loading the applet from a local disk, type the following at the URL location:

   `appletviewer <`*full-pathname*`>/RE.html`

   If loading the applet from the Web server, type the following at the URL location:

   `http://<www.server>/<URL path>/RE.html`
3. Press **Enter**. The Repository Editor logon window displays.

Starting the Repository Editor from a Web server:

To start the Repository Editor from a local file:

1. Set the CLASSPATH to include the Jolt class directory.
2. Type: `file:<`*full-pathname*`>/RE.html`

To start the Repository Editor from a Web server:

1. Ensure that the `CLASSPATH` does not include the Jolt class directory
2. Remove the Jolt classes from `CLASSPATH`.
3. Type the following:

   `http://<www.server>/<URL path>/RE.html`

Note: If `jolt.jar` and `admin.jar` are in the same directory as `RE.html`, the web server provides the classes. If they are not in the same directory as `RE.html`, modify the applet code base.

4. Press **Enter**. The Repository Editor logon window displays.

Log on to the Repository Editor

After starting the Jolt Repository Editor, follow these directions to log on:

1. Type the name of the server machine designated as the "access point" to the BEA Tuxedo application and select the port number text field.
2. Type the port number and press **Enter**. The system validates the server and port information.

   Note: Unless you are logging on through the Jolt Relay, the same port number is used to configure the Jolt Listener. Refer to your `UBBCONFIG` file for additional information.

3. Type the BEA Tuxedo Application Password and press **Enter**. Based on the authentication level, type the remaining information.
4. Type the BEA Tuxedo user name and press **Tab**.
5. Type the BEA Tuxedo user password and press **Enter**.

Note: The Jolt 1.2 Repository Editor uses the hardcoded `joltadmin` for the user role.

The **Packages** and **Services** options are activated.

Repository Editor Logon Window Description

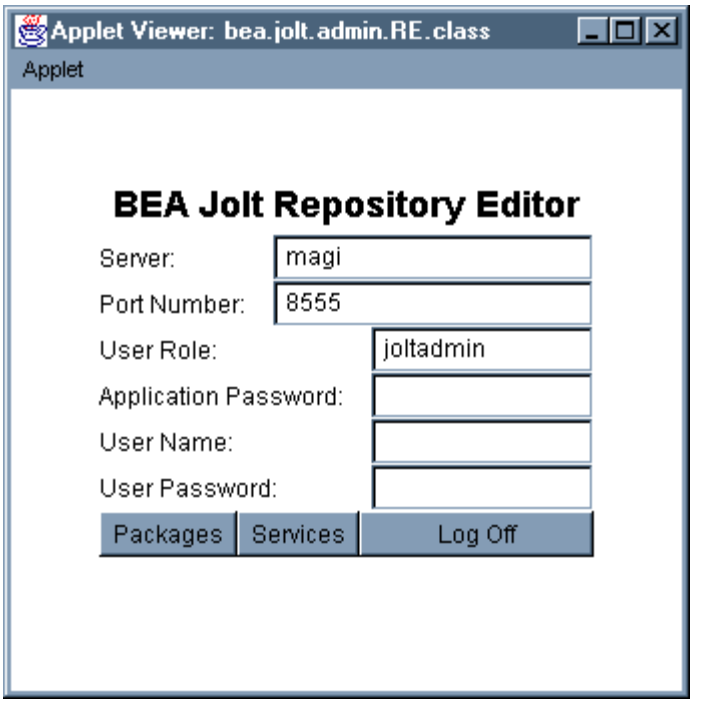
The following table details the options of the Repository Editor logon window.

Option	Description
Server	Type the server name.
Port Number	Type the port number in decimal value. **Note:** After the server name and port number are entered, the user name and password fields are activated. Activation is based on the authentication level of the BEA Tuxedo application.
Application Password	BEA Tuxedo administrative password text entry.
User Name	BEA Tuxedo user identification text entry. The first character must be an alpha character.
User Password	BEA Tuxedo password text entry.
User Role	BEA Tuxedo user role. Required only if BEA Tuxedo authentication level is USER_AUTH or higher.
Packages	Accesses the Packages window. (Enabled after the logon.)
Services	Accesses the Services window. (Enabled after the logon.)

Exit the Repository Editor

Exit the Repository Editor when you are finished adding, editing, testing, or deleting packages, services, and parameters. Figure 16-1 is an example of the Repository Editor window before exiting. Only **Packages**, **Services**, and **Close** are enabled. All text entry fields are disabled.

Figure 16-1 Example of the Repository Editor Logon Window Before Exiting



To exit the Repository Editor:

1. Select **Back** from a previous window to return to the Logon window.
2. Select **Close** to terminate the connection with the server. The Repository Editor Logon window continues to display with disabled fields.
3. Select **Close** from your browser menu to remove the window from your screen.

Configure the BEA Tuxedo TMUSREVT Server for Event Subscription

Jolt Event Subscription is used to receive event notifications from either BEA Tuxedo services or other BEA Tuxedo clients. Configure the BEA Tuxedo `TMUSREVT` server and modify the application `UBBCONFIG` file. Listing 16-1 shows the relevant `TMUSREVT` parameters in the `UBBCONFIG` File:

Listing 16-1 TMUSREVT Parameters in the UBBCONFIG File

```
TMUSREVT        SRVGRP=EVBGRP1  SRVID=40        GRACE=3600
                ENVFILE="/usr/tuxedo/bankapp/TMUSREVT.ENV"
                CLOPT="-e tmusrevt.out -o tmusrevt.out -A --
                -f /usr/tuxedo/bankapp/tmusrevt.dat"
                SEQUENCE=11
```

In the SERVERS sections of the UBBCONFIG file, specify the SRVGRP and SRVID.

Configure Jolt Relay

On UNIX:

Start the JRLY process on UNIX by typing the following command a the system prompt:

```
jrly -f <config_file_path>
```

If the configuration file does not exist or cannot be opened, the JRLY writes a message to standard error, attempts to log the startup failure in the error log, then exits.

On UNIX and NT:

The format of the configuration file is a TAG=VALUE format. Blank lines or lines starting with a "#" are ignored. Listing 16-2 is an example of the formal specifications of the configuration file.

Listing 16-2 Formal Configuration File Specifications

```
LOGDIR=<LOG_DIRECTORY_PATH>
ACCESS_LOG=<ACCESS_FILE_NAME in LOGDIR>
ERROR_LOG=<ERROR_FILE_NAME in LOGDIR>
LISTEN=<IP:Port combination where JRLY will accept
comma-separated connections>
CONNECT=<IP:Port1, IP:Port2...IP:PortN:Port(List of IP:Port
combinations associated with JRADs: can be 1...N)>
```

On NT Only (Optional):

SOCKETTIMEOUT is the time in seconds for which JRLY NT service blocks for network activity (new connections, data to be read, closed connections). SOCKETTIMEOUT also affects the SCM. When the SCM requests the NT service to stop, the SCM must wait for at least SOCKETTIMEOUT seconds before quitting.

Note: The format for directory and file names is determined by the operating system. UNIX systems use the forward slash (/). NT systems use the backslash (\). If any of the files specified in LOGDIR, ACCESS_LOG, or ERROR_LOG cannot be opened for writing, the JRLY prints an error message on stderr and exits.

The format for host names and port numbers are shown in Table 16-1.

Table 16-1 Host Name and Port Number Formats

Host Name/Port Number	Description
Hostname:Port	Hostname is a string; Port is a decimal number.
//Hostname:Port	Hostname is a string; Port is a decimal number.
IP:Port	IP is a dotted notation IP address; Port is a decimal number.

Start the Jolt Relay Adapter (JRAD).

1. Type: `tmloadcf -y <UBBFILE>`
2. Type: `tmboot`

Configure the JRAD

A single JRAD process can only be connected to a single JRLY. A JRAD can be configured to communicate with only one JSL and its associated JSH. However, multiple JRADs can be configured to communicate with one JSL. The CLOPT parameter for BEA Tuxedo services must be included in the UBBCONFIG file.

1. Type: `-l <hexadecimal format>` (The port to the JSL for the JRLY to connect on behalf of the client.)
2. Type: `-c <hexadecimal format>` (The address of the corresponding JSL to which JRAD connects.)

Note: The format is 0x0002PPPNNN or, in dot notation, 100.100.10.100.

3. Configure networked components. **Jolt is now configured.**

Jolt Background Information

This section contains additional information on Jolt components.

Jolt Server

The Jolt Server is a listener that supports one or more handlers.

Jolt Server Listener (JSL). The JSL is configured to support clients on an IP/port combination.The JSL works with the Jolt Server Handler (JSH) to provide client connectivity to the backend of the Jolt system. The JSL runs as a BEA Tuxedo server.

Jolt Server Handler (JSH). The JSH is a program that runs on a BEA Tuxedo server machine to provide a network connection point for remote clients. The JSH works with the JSL to provide client connectivity residing on the backend of the Jolt system. More than one JSH can be available to the JSL, up to 32,767. (See description of the `-M` command-line option on page 3-26.)

System Administrator Responsibilities. The system administrator's responsibilities for the server components of Jolt include:

- Determining the JSL network address.
- Determining the number of Jolt clients to be serviced. (The number of clients to be serviced is limited by `MAXWSCLIENTS` in `UBB`.)
- Determining the minimum and maximum number of JSHs.

Starting the JSL

To start all administrative and server processes in the `UBBCONFIG` file:

1. Type: `tmloadcf`

   This command parses the configuration file and loads the binary version of the configuration file.

2. Type: `tmboot -y`

   This command activates the application specified in the configuration file.

If you do not enter any options, a prompt asks you if you really want to overwrite your `TUXCONFIG` file.

See the *Administering the BEA Tuxedo System* or the *BEA Tuxedo Reference Manual* for information on `tmloadcf` and `tmboot`.

Shutting Down the JSL

All shutdown requests to the Jolt servers are initiated by the BEA Tuxedo command:

```
tmshutdown -y.
```

During shutdown:

- No new client connections are accepted.
- All current client connections are terminated. BEA Tuxedo rolls back in-flight transactions. Each client receives an error message indicating that the service is unavailable.

Restarting the JSL

BEA Tuxedo monitors the JSL and restarts it in the event of a failure. When BEA Tuxedo restarts the listener process, the following occurs:

- Clients attempting a listener connection must try to reconnect. Clients attempting a handler connection receive a timeout or a time delay.
- Clients currently connected to a handler are disconnected (JSH exits when its corresponding JSL exits normally).

Configuring the JSL

The Jolt Server Listener (JSL) is a BEA Tuxedo server responsible for distributing connection requests from Jolt to the Jolt Server Handler (JSH). BEA Tuxedo must be running on the host machine where the JSL and JREPSVR are located.

JSL Command-Line Options

The server may need to obtain information from the command line. The CLOPT parameter allows you to specify command-line options that can change some defaults in the server. The JSL command-line options are explained in Table 16-2.

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
[-c *compression_threshold*]	Enables application data sent between a Jolt client and a Jolt server (JSH) to be compressed during transmission over the network. *compression_threshold* is a number that you specify between 0 and 2,147,483,647 bytes. Any messages that are larger than the specified compression threshold are compressed before transmission. The default is no compression; that is, if no compression threshold is specified, Jolt does not compress messages on client or server. **Note:** The previous -c *connection-mode* option has been replaced with the -j *connection-mode* option.
[-d *device_name*]	The device for platforms using the Transport Layer Interface. There is no default. Required. (Optional for sockets)

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
[-H *external netaddr*]	*external netaddr* is the network address Jolt clients use to connect to the application. The JSL process uses this address to listen for clients attempting to connect at this address. If the address is `0x0002MMMMddddddddd` and JSH network address is `0x00021111ffffffff`, the known network address is `0x00021111dddd dddd`. If the address starts with "//" network address, the type is IP based and the TCP/IP port number of JSH network address is copied into the address to form the combined network address. The IP address must be specified in the following form: `-H //external ip address:MMMM` (Optional for JSL in BEA Tuxedo 6.4 and 6.5)
[-I *init-timeout*]	The time (in seconds) that a Jolt client is allowed to complete initialization through the JSH before it is timed out by the JSL. Default is 60 seconds. (Optional)
[-j *connection_mode*]	The following connection modes from clients are allowed: RETAINED - the network connection is retained for the full duration of a session. RECONNECT - the client establishes and brings down a connection when an idle timeout is reached, reconnecting for multiple requests within a session. ANY - the server allows a client to request either a RETAINED or RECONNECT type of connection for a session. The default is ANY. That is, if no option is specified, the server allows a client to request either a RETAINED or RECONNECT type of connection. (Optional) **Note:** This option has been changed in this release from `-c [connection_mode]` to `-j [connection_mode]`.
[-m *minh*]	The minimum number of JSHs that are available in conjunction with the JSL at one time. The range of this parameter is from 0 through 255. Default is 0. (Optional)

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
[-H *external netaddr*]	*external netaddr* is the network address Jolt clients use to connect to the application. The JSL process uses this address to listen for clients attempting to connect at this address. If the address is `0x0002MMMMddddddddd` and JSH network address is `0x00021111ffffffff`, the known network address is `0x00021111dddd dddd`. If the address starts with "//" network address, the type is IP based and the TCP/IP port number of JSH network address is copied into the address to form the combined network address. The IP address must be specified in the following form: `-H //external ip address:MMMM` (Optional for JSL in BEA Tuxedo 6.4 and 6.5)
[-I *init-timeout*]	The time (in seconds) that a Jolt client is allowed to complete initialization through the JSH before it is timed out by the JSL. Default is 60 seconds. (Optional)
[-j *connection_mode*]	The following connection modes from clients are allowed: RETAINED - the network connection is retained for the full duration of a session. RECONNECT - the client establishes and brings down a connection when an idle timeout is reached, reconnecting for multiple requests within a session. ANY - the server allows a client to request either a RETAINED or RECONNECT type of connection for a session. The default is ANY. That is, if no option is specified, the server allows a client to request either a RETAINED or RECONNECT type of connection. (Optional) **Note:** This option has been changed in this release from `-c [connection_mode]` to `-j [connection_mode]`.
[-m *minh*]	The minimum number of JSHs that are available in conjunction with the JSL at one time. The range of this parameter is from 0 through 255. Default is 0. (Optional)

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
[-M *maxh*]	The maximum number of JSHs that are available in conjunction with the JSL at one time. If this option is not specified, the parameter defaults to MAXWSCLIENTS divided by the rounded-up -x multiplexing factor (MPX). If specified, the -M option takes a value from 1 to 32,767. (Optional)
[-n *netaddr*]	Network address used by the Jolt listener with BEA Tuxedo 6.4 and 6.5, and WebLogic Enterprise 4.2. TCP/IP addresses may be specified in the following formats: "//host.name:port_number" "//#.#.#.#:port_number" In the first format, the domain finds an address for hostname using the local name resolution facilities (usually DNS). Hostname must be the local machine, and the local name resolution facilities must unambiguously resolve hostname to the address of the local machine. In the second example, the "#.#.#.#" is in dotted decimal format. In dotted decimal format, each # should be a number from 0 to 255. This dotted decimal number represents the IP address of the local machine.

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
	In both of the above formats, `port_number` is the TCP port number at which the domain process listens for incoming requests. `port_number` can either be a number between 0 and 65535 or a name. If `port_number` is a name, then it must be found in the network services database on your local machine. The address can also be specified in hexadecimal format when preceded by the characters "0x". Each character after the initial "0x" is a number from 0 to 9 or a letter from A to F (case insensitive). The hexadecimal format is useful for arbitrary binary network addresses such as IPX/SPX or TCP/IP. There is no default. (Required)
[`-T` *`Client-timeout`*]	The time (in minutes) allowed for a client to stay idle. If a client does not make any requests during this time, the JSH disconnects the client and the session is terminated. If an argument is not supplied, the session does not timeout. When the `-j ANY` or `-j RECONNECT` option is used, always specify `-T` with an idle timeout value. If `-T` is not specified and the connection is suspended, JSH does not automatically terminate the session. The session never terminates if a client abnormally ends the session. If a parameter is not specified, the default is no timeout. (Optional)
[`-w` *`JSH`*]	This command line option indicates the Jolt Server Handler. Default is JSH. (Optional)
[`-x` *`mpx-factor`*]	This is the number of clients that one JSH can service. Use this parameter to control the degree of multiplexing within each JSH process. If specified, this parameter takes a value from 1 to 32767 for UNIX and NT. Default value is 10. (Optional)

Table 16-2 JSL Command-Line Options

JSL Command Line Option	Description
`[-Z 0|40|128]`	When establishing a network link between a Jolt client and the JSH, allows encryption up to this level.The initial 0 means no DH nodes, no RC4. 40 and 128 specify the length (in bits) of the encryption key. DH key exchange is needed to generate keys. Session keys are not transmitted over the network. The default value is 0.

Security and Encryption

Authentication and key exchange data are transmitted between Jolt clients and the JSL/JSH using the Diffie-Hellman key exchange. All subsequent exchanges are encrypted using RC4 encryption. International packages use a DES key exchange and a 128-bit key, with 40 bits encrypted and 88 bits exposed.

Programs using the 128-bit encryption cannot be exported outside the United States without proper approval from the United States government. Customers with intranets extending beyond the United States cannot use this mode of encryption if any internal clients are outside the United States.

Jolt Relay

The combination of the Jolt Relay (JRLY) and its associated Jolt Relay Adapter (JRAD) is typically referred to as the Internet Relay. Jolt Relay is a component that routes messages from a Jolt client to a JSL or JSH. This eliminates the need for the JSH and BEA Tuxedo to run on the same machine as the Web server (generally considered as insecure). The Jolt Relay consists of two components illustrated in Figure 16-2.

- **Jolt Relay (JRLY)**. The JRLY is the Jolt Relay front-end. It is not a BEA Tuxedo client or server and is not dependent on the BEA Tuxedo version. It is a stand-alone software component. It requires only minimal configuration to allow it to work with Jolt clients.

- **Jolt Relay Adapter (JRAD)**. The JRAD is the Jolt Relay back-end. It is a BEA Tuxedo system server, but does not include any BEA Tuxedo services. It requires command line arguments to allow it to work with the JSL and the BEA Tuxedo system.

Note: The Jolt Relay is transparent to Jolt clients and Jolt servers. A Jolt server can simultaneously connect to intranet clients directly, or via the Jolt Relay to Internet clients.

Figure 16-2 Jolt Internet Relay Path

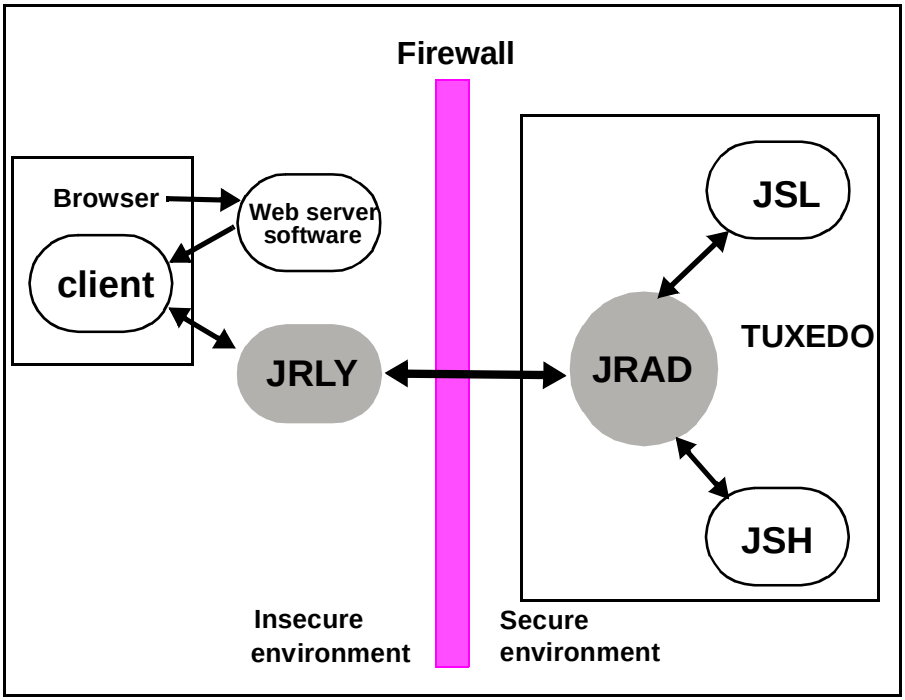


Figure 16-2 shows how a browser connects to the Web server software and downloads the Jolt applets. The Jolt applet or client connects to the JRLY on the Web server machine. The JRLY forwards the Jolt messages across the firewall to the JRAD. The JRAD selectively forwards messages to the JSL or appropriate JSH.

Jolt Relay Failover

There are two points of failovers associated with JRLY:

- Jolt Client to JRLY connection failover
- JRLY to JRAD connection failover

Jolt Client to JRLY Connection Failover

If one server address does not result in a successful session, the failover function allows the Jolt Client API to connect to the next free (unconnected) JRLY specified in the argument list of the API. To enable this failover in an NT environment, multiple NT JRLY services can be executed. In a non-NT environment, multiple JRLY processes are executed. Each JRLY (service or process) has its own configuration file. This type of failover is handled by Jolt 1.2 client API changes that allow you to specify a list of Jolt server addresses (JSL or JRLY).

JRLY to JRAD Adapter Connection Failover

Each JRLY configuration file has a list of JRAD addresses. When a JRAD is unavailable, JRLY tries to connect to the next free (unconnected) JRAD, in a round-robin fashion. Two JRLYs cannot connect to the same JRAD. Given these facts, you can make the connection efficient by giving different JRAD address orders. That is, if you make one extra JRAD available on standby, the first JRLY that loses its JRAD connects to the extra JRAD. This type of failover is handled by JRLY alone.

If any of the listed JRADs are not executing when JRLY is started, the initial connection fails. When a Jolt client tries to connect to JRLY, the JRLY again tries to connect to the JRAD.

To accommodate the failover functionality, you have to boot multiple JRADs by configuring them in the `UBBCONFIG` file.

Jolt Relay Process

The JRLY (front-end relay) process can be started before or after the JRAD is started. If the JRAD is not available when the JRLY is started, the JRLY attempts to connect to the JRAD when it receives a client request. If JRLY is still unable to connect to the JRAD, the client is denied access and a warning is written to the JRLY error log file.

Starting the JRLY on UNIX

Start the JRLY process by typing the command name at a system prompt.

```
jrly -f <config_file_path>
```

If the configuration file does not exist or cannot be opened, the JRLY prints an error message. Refer to Appendix B of the *BEA Jolt Developer's Guide* for the Jolt Relay error messages.

If the JRLY is unable to start, it writes a message to standard error and attempts to log the startup failure in the error log, then exits.

JRLY Command-Line Options for NT

This section discusses command-line options that are available from the NT version of `JRLY.exe`. Note that:

- JRLY as an NT service is available only for Microsoft Windows NT.
- When the display suffix is optional (when [*`display_suffix`*] is shown), all operations are performed on the default JRLY NT service instance.
- For manually-installed, additional JRLY services, a suffix (any string) is required. Also, you can install the default service manually by omitting the optional string suffix.
- Each instance of JRLY NT service uses the same binary executable file.
- A new process is started for each instance of JRLY NT service.
- The syntax for these options is: `jrly -command.`
- Text specified within brackets ([ ]) is optional.

- All the following commands except `-start` and `-stop` require that you have write access to Windows NT Registry.
- The `-start` and `-stop` commands require that you have NT Service control access. These restrictions are based on NT user restrictions.

The command line options are as follows:

`jrly -install [`*`display_suffix`*`]`

Install `jrly` as an NT service.

Example 1: `jrly -install`

In this example, the default JRLY is installed as an NT Service and is displayed in the Service Control Manager (SCM) as **Jolt Relay**.

Example 2: `jrly -install MASTER`

In this case, an instance of JRLY is installed as an NT Service and is displayed in the SCM as **Jolt Relay_MASTER**. The suffix, MASTER, does not have any significance; it is only used to uniquely identify various instances of JRLYs.

Discussion: At this point, this instance of JRLY is not ready for starting. It must be assigned the configuration file (see the `set` command discussion) that specifies the listening TCP/IP port, JSH connection TCP/IP port, log files, and sockettimeout. This file should not be shared between various instances of JRLY.

`jrly -remove [display_suffix] | -all`

Remove one or all JRLY from NT service.

If [*`display_suffix`*] is specified, this command removes the specified JRLY service.

If [*`display_suffix`*] is not specified, this command removes the default JRLY from being an NT Service.

If the `-all` option is specified, all the JRLY NT Services are removed. Related NT registry entries under:

`HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services`

and

`HKEY_LOCAL_MACHINE\Software\BEA\Jolt\1.2`

are removed.

`jrly -set [-d display_suffix] -f config_file`

Update the registry with the full path of a new configuration file.

Example 1: `jrly -set -f c:\tux64\udataobj\jolt\jrly.con`

In this example, the default JRLY NT Service (Jolt Relay) is assigned a configuration file called `jrly.con` that is located in: `c:\tux64\udataobj\jolt` directory.

Example 2: `jrly -set -d MASTER -f c:\tux64\udataobj\jolt\master.con`

Here, the JRLY NT Service instance, called **Jolt Relay_MASTER** is assigned a configuration file called `jrly_master.con` that is located in `c:\tux64\udataobj\jolt` directory.

`jrly -manual [display_suffix]`

Set the start/stop to manual.

This command sets the specified JRLY instance to be manually controlled, using either the command-line options or the SCM.

`jrly -auto [display_suffix]`

Set the start/stop to automatic.

This command sets all the operations for specified NT Service to be automatically started when the OS boots and stopped when the OS shuts down.

`jrly -start [display_suffix]`

Start the JRLY.

This command starts the specified JRLY.

`jrly -stop [display_suffix]`

Stop the JRLY.

This command stops the specified JRLY.

`jrly -version`

Print the current version of JRLY.

This command prints the current version of JRLY binary.

```
jrly -help
```

Print command-line options.

This command prints the command-line options with brief descriptions.

JRLY Command-Line Option for UNIX

There is only one JRLY command-line option for UNIX:

```
jrly -f <config_file_path>
```

Start the JRLY process.

This option starts the JRLY process. If the configuration file does not exist or cannot be opened, the JRLY prints an error message. If the JRLY is unable to start, it writes a message to standard error, attempts to log the startup failure in the error log, then exits.

JRLY Configuration File

The format of the configuration file is a TAG=VALUE format. Blank lines or lines starting with a "#" are ignored. Refer to Listing 16-3 for an example of the formal specifications of the configuration file.

Listing 16-3 Specification of Configuration File

```
LOGDIR=<LOG_DIRECTORY_PATH>
ACCESS_LOG=<ACCESS_FILE_NAME in LOGDIR>
ERROR_LOG=<ERROR_FILE_NAME in LOGDIR>
LISTEN=<IP:Port combination where JRLY will accept connections>
CONNECT=<IP:Port combination associated with JRAD>
SOCKETTIMEOUT=<Seconds for socket accept()function>
```

Note: SOCKETTIMEOUT is the duration (in seconds) for which the relay NT service blocks for network activity (new connections, data to be read, closed connections). It is valid only on NT machines.

SOCKETTIMEOUT also affects the SCM. When the SCM requests the service to stop, the SCM needs to wait at least SOCKETTIMEOUT seconds before doing so.

Listing 16-4 shows an example of the JRLY configuration file. The CONNECT line specifies the IP address and port number of JRAD machine.

Listing 16-4 Example of JRLY Configuration File

```
LOGDIR=/usr/log/relay
ACCESS_LOG=access_log
ERROR_LOG=errorlog
# jrly will listen on port 4444
LISTEN=200.100.10.100:4444
CONNECT=200.100.20.200:4444, 200.100.20.200:5555,...
SOCKETTIMEOUT=30            //See note under Listing 3-4
```

The format for directory and file names is determined by the operating system. UNIX systems use the forward slash (/). NT systems use the backslash (\). If any of the files specified in LOGDIR, ACCESS_LOG or ERROR_LOG cannot be opened for writing, the JRLY prints an error message on stderr and exits.

The format for host names and port numbers are shown in Table 16-3.

Table 16-3 Host Name and Port Number Formats

Host Name/Port Number	Descriptions
Hostname:Port	Hostname is a string, Port is a decimal number
//Hostname:Port	Hostname is a string, Port is a decimal number
IP:Port	IP is a dotted notation IP address, Port is a decimal number

Jolt Relay Adapter

The Jolt Relay Adapter (back-end relay) is a BEA Tuxedo system server. The Jolt Relay Adapter (JRAD) server may or may not be located on the same BEA Tuxedo host machine (in SHM mode) and server group to which the JSL server is connected.

The JRAD can be started independently of its associated JRLY. JRAD tracks its startup and shutdown activity in the BEA Tuxedo log file.

JRAD Configuration

A single JRAD process can only be connected to a single JRLY. A JRAD can be configured to communicate with only one JSL and its associated JSHs. However, multiple JRADs can be configured to communicate with one JSL. The `CLOPT` parameter for the BEA Tuxedo servers must be included in the `UBBCONFIG` file. For additional information about the `CLOPT` parameters, refer to Table 16-4.

Table 16-4 JRAD CLOPT Parameter Descriptions

CLOPT Parameter	Description
`-l <hexadecimal format>`	Port to listen for the JRLY to connect on behalf of the client.
`-c <hexadecimal format>`	The address of the corresponding JSL to which JRAD connects.
`-H <hexadecimal format>`	Used when there is a network address translation performed for JRLY listen address.

Note: The format is `0x0002PPPPNNN`. Refer to the *BEA Jolt 1.2 Release Notes* for additional information on JRAD.

Listing 16-5 shows the sample `UBBCONFIG` file.

Listing 16-5 Sample JRAD Entry in UBBCONFIG File

```
# JRAD host 200.100.100.10 listens at port 2000, connects to JSL
port 8000 on the same host

JRAD    SRVGRP=JSLGRP   SRVID=60
        CLOPT="-A -- -l 0x000207D0C864640A –c 0x00021f40C864640A"
```

Network Address Configurations

There are several networked components that must be configured to work together when configuring a Jolt Internet Relay. Prior to configuration, review the criteria required in Table 16-5 and record the information. This will help minimize the possibility of misconfiguration.

Table 16-5 Jolt Internet Relay Network Address Configuration Criteria

JRLY	JRAD	JSL
LISTEN: <Location where the clients connect> CONNECT: <Location of your JRAD. Must match the `-l` parameter of JRAD>	`-l`: <Location of where the listener connects the JRLY> `-c`: <Location of JSL. Must match `-n` parameter of JSL>	`-n`: <Location of JSL. Must match `-c` parameter of JRAD>

Jolt Repository

The Jolt Repository contains BEA Tuxedo service definitions that allow Jolt clients to access BEA Tuxedo services. The Jolt Repository files included with the installation contain service definitions used internally by Jolt. See the *BEA Jolt Developer's Guide* for detailed instructions on how to add definitions to the application services.

Configuring the Jolt Repository

To configure the Jolt Repository, modify the application UBBCONFIG file. The UBBCONFIG file is an ASCII version of the BEA Tuxedo configuration file. Create a new UBBCONFIG file for each application. See the *BEA BEA Tuxedo Reference Manual* for information regarding the syntax of the entries for the file. Listing 16-6 shows relevant portions of the UBBCONFIG file.

Listing 16-6 Sample UBBCONFIG File

```
*GROUPS
JREPGRP         GRPNO=94 LMID=SITE1
*SERVERS
JREPSVR SRVGRP=JREPGRP SRVID=98
RESTART=Y GRACE=0 CLOPT="-A -- -W -P /app/jrepository"
JREPSVR SRVGRP=JREPGRP SRVID=97
RESTART=Y RQADDR=JREPQ GRACE=0 CLOPT="-A -- -P /app/jrepository"
JREPSVR SRVGRP=JREPGRP SRVID=96
RESTART=Y RQADDR=JREPQ REPLYQ=Y GRACE=0 CLOPT="-A -- -P
/app/jrepository"
```

Note: For UNIX systems, use the slash (/) when setting the path to the jrepository file (for example, app/repository). For NT systems, use the backslash (\) and specify the drive name (for example, c:\app\repository).

Change the sections of the UBBCONFIG file indicated in Table 16-6:

Table 16-6 UBBCONFIG File

Section	Parameters to be specified
GROUPS	LMID, GRPNO
SERVERS	SRVGRP, SRVID

GROUPS Section

A GROUPS entry is required for the group that includes the Jolt Repository. The group name parameter is a name selected by the application.

1. Specify the same identifiers given as the value of the LMID parameter in the MACHINES section.
2. Specify the value of the GRPNO between 1 and 30,000 in the GROUPS section.

SERVERS Section

The Jolt Repository server, JREPSVR, contains services for accessing and editing the Repository. Multiple JREPSVR instances share repository information through a shared file. Include JREPSVR in the SERVERS section of the UBBCONFIG file.

1. Indicate a new server identification (for example, 98) with the SRVID parameter.
2. Specify the -W flag for one JREPSVR to ensure that you can edit the Repository. The Repository is read-only without this flag.

   Note: You must install only one writable JREPSVR (that is, only one JREPSVR with the -W flag). Multiple read-only JREPSVRs can be installed on the same host.
3. Type the -P flag to specify the path of the repository file. An error message displays in the BEA Tuxedo ULOG file if the argument for the -P flag is not entered.
4. Add the file pathname of the Repository file (for example, /app/jrepository).
5. Boot the BEA Tuxedo system using the tmloadcf command (for example, tmloadcf -y ubbconfig) and tmboot command. See the *Administering the BEA Tuxedo System* for information on tmloadcf and tmboot.

Repository File

A Repository file, jrepository, is available with Jolt. This file includes bankapp services and the Repository services that you can modify, test, and delete using the Repository Editor.

Note: The Jolt 1.2 Repository file is different from the Jolt 1.1 Repository file. If you are using Jolt 1.1, you must make applicable changes.

Inside the `jrepository` file, the service definitions for the services in the Jolt Repository Server (JREPSVR) have FML32 as their buffer types. During installation, the new service definitions for Jolt 1.2 JREPSVR should be appended to the existing `jrepository` file as part of the upgrade.

Start with the `jrepository` file provided with the installation, even if you are not going to test the `bankapp` application with Jolt. Delete the `bankapp` packages or services that you do not need.

The pathname of the file must match the argument of the `-P` option.

Warning: Do not modify the Repository files manually or you will not be able to use the Repository Editor. Although the `jrepository` file can be modified and read with any text editor, the Jolt system does not have integrity checks to ensure that the file is in the proper format. Any manual changes to the `jrepository` file might not be detected until runtime. See "Using the Jolt Repository Editor" in the *BEA Jolt Developer's Guide* for additional information.

Initializing Services Using BEA Tuxedo and the Repository Editor

You must initially define the BEA Tuxedo services using BEA Tuxedo and Jolt in order to make the Jolt services available to the client.

1. Build the BEA Tuxedo server containing the service. See *Administering the BEA TUXEDO System* or *BEA Tuxedo Programmer's Guide* for additional information on the following:
   - Building the BEA Tuxedo applications/server
   - Editing the `UBBCONFIG` file
   - Updating the `TUXCONFIG` file
   - Administering the `tmboot` command
2. Access the Jolt Repository Editor. See "Using the Jolt Repository Editor" in the *BEA Jolt Developer's Guide* for additional information on the following:
   - Adding a Service

- Saving Your Work
- Testing a Service
- Exporting/Unexporting Services

Event Subscription

Jolt Event Subscription is used to receive event notifications from either BEA Tuxedo services or other BEA Tuxedo clients:

Unsolicited Event Notifications. These are notifications that a Jolt client receives as a result of a BEA Tuxedo client or service subscribing to unsolicited events, and a BEA Tuxedo client issuing a broadcast (using either a `tpbroadcast()` or a directly targeted message via a `tpnotify()` ATMI call). Unsolicited event notifications do not need the `TMUSREVT` server.

Brokered Event Notifications. These notifications are received by a Jolt client via the BEA Tuxedo Event Broker. The notifications are only received when both Jolt clients subscribe to an event and any BEA Tuxedo client or server posts an event using `tppost()`. Brokered event notifications require the `TMUSREVT` server.

Configuring for Event Subscription

Configure the BEA Tuxedo `TMUSREVT` server and modify the application `UBBCONFIG` file. Listing 16-7 shows the relevant sections of `TMUSREVT` parameters in the `UBBCONFIG` file. See the *BEA Tuxedo Programmer's Guide* for information regarding the syntax of the entries for the file.

Listing 16-7 UBBCONFIG File

```
TMUSREVT        SRVGRP=EVBGRP1  SRVID=40        GRACE=3600
                ENVFILE="/usr/tuxedo/bankapp/TMUSREVT.ENV"
                CLOPT="-e tmusrevt.out -o tmusrevt.out -A --
```

```
-f /usr/tuxedo/bankapp/tmusrevt.dat"
SEQUENCE=11
```

In the SERVERS section of the UBBCONFIG file, modify the SRVGRP and SRVID parameters as needed.

Filtering BEA Tuxedo FML or VIEW Buffers

Filtering is a process that allows you to customize a subscription. If you require additional information about the BEA Tuxedo Event Broker, subscribing to events, or filtering, refer to the *BEA Tuxedo Programmer's Guide, Volume 1*.

In order to filter BEA Tuxedo FML or VIEW buffers, the field definition file must be available to BEA Tuxedo at runtime.

Note: There are no special requirements for filtering STRING buffers.

Buffer Types

Table 16-7shows BEA Tuxedo buffer types:

Table 16-7 BEA Tuxedo Buffer Types

Buffer Type	Description
FML	Attribute, value pair. Explicit.
VIEW	C structure. Very precise offsetting. Implicit.
STRING	Length and offset are different values. All readable.
CARRAY	Character array. Blob of binary data. Only client and server know - JSL doesn't.
X_C_TYPE	Equivalent to VIEW.
X_COMMON	Equivalent to VIEW, but used for both COBOL and C.
X_OCTET	Equivalent to CARRAY.

FML Buffer Example

Listing 16-8 shows an example using the FML buffer. The FML field definition table is made available to BEA Tuxedo by setting the `FIELDTBLS` and `FLDTBLDIR` variables.

To filter a field found in the `my.flds` file:

1. Copy the `my.flds` file to `/usr/me/bankapp` directory.
2. Add `my.flds` to the `FIELDTBLS` variable in the `TMUSREVT.ENV` file as shown in Listing 16-8:

Listing 16-8 FIELDTBLS Variable in the TMUSREVT.ENV File

```
FIELDTBLS=Usysflds,bank.flds,credit.flds,event.flds,my.flds
FLDTBLDIR=/usr/tuxedo/me/T6.2/udataobj:/usr/me/bankapp
```

If `ENVFILE="/usr/me/bankapp/TMUSREVT.ENV"` is included in the definition of the `UBBCONFIG` file (shown in Listing 16-7), the `FIELDTBLS` and `FLDTBLDIR` definitions are taken from the `TMUSREVT.ENV` file and not from your environment variable settings.

If you remove the `ENVFILE="/usr/me/bankapp/TMUSREVT.ENV"` definition, the `FIELDTBLS` and `FLDTBLDIR` definitions are taken from your environment variable settings. The `FIELDTBLS` and `FLDTBLDIR` definitions must be set to the appropriate value prior to booting the BEA Tuxedo system.

For additional information on event subscriptions and the Jolt Class Library, refer to "Using the Jolt Class Library" in the *BEA Jolt Developer's Guide*.

BEA Tuxedo Background Information

The following sections provide detailed configuration information. Skip this section if you are familiar with BEA Tuxedo.

Configuration File

The BEA Tuxedo configuration file for your application exists in two forms, the ASCII file, UBBCONFIG, and a compiled version called TUXCONFIG. Once you have created a TUXCONFIG, it is best to think of your UBBCONFIG as a backup.

You can make changes to the UBBCONFIG file with your preferred NT editor. Then, at a time when your application is not running, and when you are logged in to your MASTER machine, you can recompile your TUXCONFIG by running tmloadcf(1). System/T prompts you to make sure you really want to overwrite your existing TUXCONFIG file. (If you enter the command with the -y option, the prompt is suppressed.)

The UBBCONFIG File

A binary configuration file called the TUXCONFIG file contains information used by tmboot(1) to start the servers and initialize the bulletin board of a BEA TUXEDO system in an orderly sequence. The binary TUXCONFIG file cannot be created directly. Initially, you must create a UBBCONFIG file. That file is parsed and loaded into the TUXCONFIG using tmloadcf(1). Then tmadmin(1) uses the configuration file or a copy of it in its monitoring activity. tmshutdown(1) references the configuration file for information needed to shut down the application.

Configuration File Format

The UBBCONFIG file can consist of up to nine specification sections. Lines beginning with an asterisk (*) indicate the beginning of a specification section. Each such line contains the name of the section immediately following the *. Allowable section names are: RESOURCES, MACHINES, GROUPS, NETGROUPS, NETWORK, SERVERS, SERVICES, INTERFACES, and ROUTING.

Note: The RESOURCES (if used) and MACHINES sections *must* be the first two sections, in that order; the GROUPS section must be ahead of SERVERS, SERVICES, and ROUTING.

To configure the JSL, you must modify the UBBCONFIG file. For further information regarding BEA Tuxedo configuration, refer to the *BEA Tuxedo Administration Guide*. Listing 16-9 shows relevant portions of the UBBCONFIG file.

Listing 16-9 UBBCONFIG File

```
*MACHINES
MACH1  LMID=SITE1
       MAXWSCLIENTS=40
*GROUPS
JSLGRP        GRPNO=95   LMID=SITE1
*SERVERS
JSL SRVGRP=JSLGRP SRVID=30 CLOPT= " -- -n 0x0002PPPPNNNNNNNN -d
/dev/tcp -m2 -M4 -x10"
```

The parameters shown in Table 16-8 are the only parameters that must be designated for the Jolt Server groups and Jolt Servers. You are not required to specify any other parameters.

Change the sections of the UBBCONFIG file shown in Table 16-8.

Table 16-8 UBBCONFIG File Sections

Section	Parameters to be specified
MACHINES	MAXWSCLIENTS
GROUPS	GRPNO, LMID
SERVERS	SRVGRP, SRVID, CLOPT

MACHINES Section

The MACHINES section specifies the logical names for physical machines for the configuration. It also specifies parameters specific to a given machine. The MACHINES section must contain an entry for each physical processor used by the application. Entries have the form:

ADDRESS or NAME *required parameters [optional parameters]*

where ADDRESS is the physical name of the processor, for example, the value produced by the UNIX system uname -n command.

LMID=*string_value*

This parameter specifies that the *string_value* is to be used in other sections as the symbolic name for ADDRESS. This name cannot contain a comma, and must be 30 characters or less. This parameter is required. There must be an LMID line for every machine used in a configuration.

MAXWSCLIENTS=*number*

The MAXWSCLIENTS parameter is required in the MACHINES section of the configuration file. It specifies the number of accesser entries on this processor to be reserved for Jolt and /WS clients only. The value of this parameter must be between 0 and 32,768, inclusive.

The Jolt Server and /WS use MAXWSCLIENTS in the same way. For example, if 200 slots are configured for MAXWSCLIENTS, this number configures BEA Tuxedo for the total number of remote clients used by Jolt and /WS.

Be sure to specify MAXWSCLIENTS in the configuration file. If it is not specified, the default is 0.

Note: If MAXWSCLIENTS is not set, the JSL does not boot.

GROUPS Section

This section provides information about server groups, and must have at least one server group defined in it. A server group entry provides a logical name for a collection of servers and/or services on a machine. The logical name is used as the value of the SRVGRP parameter in the SERVERS section to identify a server as part of this group. SRVGRP is also used in the SERVICES section to identify a particular instance of a service with its occurrences in the group. Other GROUPS parameters associate this group with a specific resource manager instance (for example, the employee database). Lines within the GROUPS section have the form:

GROUPNAME *required parameters* [*optional parameters*]

where GROUPNAME specifies the logical name (string_value) of the group. The group name must be unique within all group names in the GROUPS section and LMID values in the MACHINES section. The group name cannot contain an asterisk(*), comma, or colon, and must be 30 characters or less.

A GROUPS entry is required for the group that includes the Jolt Server Listener (JSL). Make the GROUPS entry as follows:

1. The group name is selected by the application, for example: JSLGRP and JREPGRP
2. Specify the same identifiers given as the value of the LMID parameter in the MACHINES section.
3. Specify the value of the GRPNO between 1 and 30,000 in the *GROUPS section.

Note: Make sure that Resource Managers are *not* assigned as a default value for all groups in the GROUPS section of your UBBCONFIG file. Making Resource Managers the default value assigns a Resource Manager to the JSL and you receive an error during tmboot. In the SERVERS section, default values for RESTART, MAXGEN, etc., are acceptable defaults for the JSL.

SERVERS Section

This section provides information on the initial conditions for servers started in the system. The notion of a server as a process that continually runs and waits for a server group's service requests to process may or may not apply to a particular remote environment. For many environments, the operating system, or perhaps a remote gateway, is the sole dispatcher of services. When either of these is the case, you need only specify SERVICE entry points for remote program entry points, and not SERVER table entries. BEA Tuxedo system gateway servers would advertise and queue remote domain service requests. Host-specific reference pages must indicate whether or not UBBCONFIG server table entries apply in their particular environments, and if so, the corresponding semantics. Lines within the SERVERS section have the form:

AOUT *required parameters* [*optional parameters*]

where AOUT specifies the file (string_value) to be executed by tmboot(1). tmboot executes AOUT on the machine specified for the server group to which the server belongs. tmboot searches for the AOUT file on its target machine, thus, AOUT must exist in a file system on that machine. (Of course, the path to AOUT can include RFS connections to file systems on other machines.) If a relative pathname for a server is given, the search for AOUT is done first in APPDIR, then in TUXDIR/bin, then in /bin, and then in <path>, where <path> is the value of the last PATH= line appearing in the machine environment file, if one exists. The values for APPDIR and TUXDIR are taken from the appropriate machine entry in the TUXCONFIG file.

Clients connect to Jolt applications through the Jolt Server Listener (JSL). Services are accessed through the Jolt Server Handler (JSH). The JSL supports multiple clients and acts as a single point of contact for all the clients to connect to the application at the network address that is specified on the JSL command line. The JSL schedules work

for handler processes. A handler process acts as a substitute for clients on remote workstations within the administrative domain of the application. The handler uses a multiplexing scheme to support multiple clients on one port concurrently.

The network address specified for the JSL designates a TCP/IP address for both the JSL and any JSH processes associated with that JSL. The port number identified by the network address specifies the port number on which the JSL accepts new client connections. Each JSH associated with the JSL uses consecutive port numbers at the same TCP/IP address. For example, if the initial JSL port number is 8000 and there are a maximum of three JSH processes, the JSH processes use ports 8001, 8002, and 8003.

Note: Misconfiguration of the subsequent JSL results in a port number collision.

Parameters Usable With JSL

In addition to the parameters specified in the previous sections, the following parameters can be used with the JSL, although you need to understand how doing so would affect your application.

`SVRGRP=`*`string_value`*

This parameter specifies the group name for the group in which the server is to run. *`string_value`* must be the logical name associated with a server group in the `*GROUPS` section, and must be 30 characters or less. This association with an entry in the `*GROUPS` section means that `AOUT` is executed on the machine with the `LMID` specified for the server group. This association also specifies the `GRPNO` for the server group and parameters to pass when the associated resource manager is opened. All server entries must have a server group parameter specified.

`SRVID=`*`number`*

This parameter specifies an *identifier*, an integer between 1 and 30,00, inclusive, that identifies this server within its group. This parameter is required on every server entry, even if the group has only one server. If multiple occurrences of servers are desired, do not use consecutive numbers for `SRVID`s; leave enough room for the system to assign additional `SRVID`s up to `MAX`.

Optional Parameters

The optional parameters of the `SERVERS` section are divided into boot parameters and runtime parameters.

Boot Parameters

Boot parameters are used by `tmboot` when it executes a server. Once running, a server reads its entry from the configuration file to determine its runtime options. The unique server identification number is used to find the right entry. The following are boot parameters.

`CLOPT=`*`string_value`*

The `CLOPT` parameter specifies a string of command line options to be passed to `AOUT` when booted.The `servopts`(5) page in the *BEA Tuxedo Reference Manual:* Section 5 lists the valid parameters.

Some of the available options apply primarily to servers under development. For example, the `-r` option directs the server to write a record to its standard error file each time a service request begins or ends.

Other command line options may be used to direct to server's standard out and standard error to specific files, or to start the server so that it initially advertises a limited set of its available services.

The default value for the `CLOPT` parameter is `-A`, which means that the server is started with all available services advertised.

The maximum length of the `CLOPT` parameter value is 256 characters; it must be enclosed in double quotes.

`SEQUENCE=`*`number`*

This parameter specifies when this server should be booted or shutdown relative to other servers. If `SEQUENCE` is not specified, servers are booted in the order found in the `SERVERS` section (and shut down in the reverse order). If some servers have sequence numbers specified and others do not, all servers with sequence numbers are booted first from low to high sequence number, then all servers without sequence numbers are booted in the order in which they appear in the configuration file. Sequence numbers must be in the range between 1 and 9999. If the same sequence number is assigned to more than one server, `tmboot` may boot those servers in parallel.

MIN=*number*

The MIN parameter specifies the minimum number of occurrences of the server to boot by tmboot. If an RQADDR is specified, and MIN is greater than 1, the servers form a Multiple Servers Single Queue (MSSQ) set. The identifiers for the servers are SRVID up to (SRVID + (MAX -1)). All occurrences of the server have the same sequence numbers as well as any other server parameters. The value range for MIN is 0 to 1000. If MIN is not specified, the default value is 1.

MAX=*number*

The MAX parameter sets the maximum number of occurrences of the server to be booted. Initially, tmboot boots MIN servers, and additional servers can be booted up to MAX occurrences using the -i option of tmboot to specify the associated server identifier. The value range for MAX is 0 to 1000. If no value is specified for MAX, the default is the same as for MIN, or 1. Keep in mind that:

- tmboot starts MIN occurrences unless you explicitly call for more with the -i SRVID option of tmboot
- If RQADDR is specified and MIN is greater than one, an MSSQ set is formed
- If MIN is not specified, the default is 1
- If MAX is not specified, the default is MIN
- MAX is especially important for conversational servers because they are spawned automatically as needed

Runtime Parameters

The runtime parameters are used by the server after it has been started by tmboot. As indicated above, tmboot uses the values found in the TUXDIR, APPDIR and ENVFILE parameters for the MACHINES section when booting the server. It also sets the PATH for the server to:

"APPDIR:TUXDIR/bin:/bin:<path>"

where <path> is the value of the last PATH= line appearing in the ENVFILE file. The following parameters are runtime parameters.

ENVFILE=*string_value*

The ENVFILE parameter for a server can be used to add values to the environment established by tmboot during initialization of the server. Variables specified in the file named in the SERVERS ENVFILE parameter are set after those in the MACHINES ENVFILE used by tmboot. These files cannot be used to override TUXDIR, APDIR, TUXCONFIG, or TUSOFFSET. The best policy is to include in the server's ENVFILE only those variable assignments known to be needed to ensure proper running of the application.

Note that on the server, this file is processed *after* the server starts. Therefore, it cannot be used to set the pathnames used to find executable or dynamically loaded files needed to execute the server. If you need to perform these tasks, use the machine ENVFILE instead.

Within ENVFILE only lines of the form

VARIABLE =*string*

are allowed. VARIABLE must start with an underscore or alphabetic character and can contain only underscore or alphanumeric characters. If the server is associated with a server group that can be migrated to a second machine, the ENVFILE must be in the same location on both machines.

CONV={Y | N}

CONV specifies whether or not the server is a conversational server. CONV takes a Y value if a conversational server is being defined. Connections can only be made to conversational servers, and rpc requests (via tpacall(3c) or tpcall(3c)) can only be made to non-conversational servers. For a request/response server, you can either set CONV=N, which is the default, or omit the parameter.

RQADDR=*string_value*

RQADDR assigns a symbolic name to the request queue of this server. MSSQ sets are established by using the same symbolic name for more than one server (or by specifying MIN greater than 1). All members of an MSSQ set must offer an identical set of services and must be in the same server group.

If RQADDR is not specified, the system assigns a unique key to serve as the queue address for this server. However, tmadmin commands that take a queue address as an argument are easier to use if queues are given symbolic names.

RQPERM=*number*

The RQPERM parameter is used to assign UNIX-style permissions to the request queue for this server. The value of *number* can be between 0001 and 0777, inclusive. If no parameter is specified, the permissions value of the bulletin board, as specified by PERM in the RESOURCES section, is used. If no value is specified there, the default of 0666 is used (this opens your application up to possible use by any login on the system, so consider this carefully).

REPLYQ={ Y | N }

The REPLYQ parameter specifies (with a Y or N) whether or not a reply queue, separate from the request queue, should be established for AOUT. If Y is specified, the reply queue is created on the same LMID as the AOUT. In cases where only one server is using the request queue, replies can be picked up from the request queue without causing problems. However, if the server is a member of an MSSQ set and contains services programmed to receive reply messages, REPLYQ should be set to Y so that an individual reply queue is created for this server. If that is not done, the reply will be sent to the request queue shared by all servers for the MSSQ set and there is no way of ensuring that it will be picked up by the server that is waiting for it.

It should be standard practice for all member servers of an MSSQ set to specify REPLYQ=Y if replies are anticipated. Servers in an MSSQ set are required to have identical offerings of services, so it is reasonable to expect that if one server in the set expects replies, any server in the set can also expect replies.

RPPERM=*number*

The RPPERM parameter is used to assign permissions to the reply queue. *number* is specified in the usual UNIX fashion (for example, 0600); the value can be between 0001 and 0777, inclusive. If RPPERM is not specified, the default value 0666 is used. This parameter is useful only when REPLYQ=Y. If requests and replies are read from the same queue, only RQPERM is needed; RPPERM is ignored.

RESTART={ Y | N }

The RESTART parameter takes a Y or N to indicate whether or not AOUT is restartable. The default is N. If the server is in a group that can be migrated, RESTART must be Y. Note that a server started with a SIGTERM signal cannot be restarted; it must be rebooted.

An application's policy on restarting servers might vary according to whether the server is in production or not. During the test phase of application development it is reasonable to expect that a server might fail repeatedly, but server failures should be rare events once the application has been put into production. You might want to set more stringent parameters for restarting servers once the application is in production.

Parameters Associated With RESTART

`RCMD=`*`string_value`*

If `AOUT` is restartable, this parameter specifies the command that should be executed when `AOUT` abnormally terminates. The string, up to the first space or tab, must be the name of an executable UNIX file, either a full pathname or relative to `APPDIR`. (Don't attempt to set a shell variable at the beginning of the command.) The command name may be optionally followed by command-line arguments. Two additional arguments are appended to the command line: the `GRPNO` and `SRVID` associated with the restarting server. *`string_value`* is executed in parallel with restarting the server.

The `RCMD` parameter can be used to specify a command to be executed in parallel with the restarting of the server. The command must be an executable UNIX system file residing in a directory on the server's `PATH`. An example of a possible use would be a command that sends a customized message to the userlog to mark the restarting of the server.

`MAXGEN=`*`number`*

If `AOUT` is restartable, this parameter specifies that it can be restarted at most (`number` - 1) times within the period specified by `GRACE`. The value must be greater than 0 and less than 256. If not specified, the default is 1 (which means that the server can be started once, but not restarted). If the server is to be restartable, `MAXGEN` must be equal to or greater than 2. `RESTART` must be `Y` or `MAXGEN` is ignored.

`GRACE=`*`number`*

If `RESTART` is `Y`, the `GRACE` parameter specifies the time period (in seconds) during which this server can be restarted, (`MAXGEN` - 1) times. The number assigned must be equal to or greater than 0, and less than 2,147,483,648 seconds (or a little more than 68 years). If `GRACE` is not specified the default is 86,400 seconds (24 hours). Setting `GRACE` to 0 removes all limitations; the server can be restarted an unlimited number of times.

Entering Parameters

BEA Tuxedo parameters, including RESTART, RQADDR, and REPLYQ, can be used with the JSL. (See *Administering the BEA Tuxedo System* for additional information regarding runtime parameters.) Enter the following parameters:

1. To identify the SRVGRP parameter, type the previously defined group name value from the GROUPS section.
2. To indicate the SRVID, type a number between 1 and 30,000 that identifies the server within its group.
3. Verify that the syntax for the CLOPT parameter is as follows:

   ```
   CLOPT= "-- -n 0x0002PPPPNNNNNNNN -d /dev/tcp -m2 -M4 -x10"
   ```

   Note: The CLOPT parameters may vary. Refer to Table 16-2 for pertinent command-line information.
4. If necessary, type the optional parameters:
   - Type the SEQUENCE parameter to determine the order that the servers are booted.
   - Specify Y to permit release of the RESTART parameter.
   - Type 0 to permit an infinite number of server restarts using the GRACE parameter.

Sample Applications in Jolt Online Resources

You can access sample code that can be modified for use with Jolt through the BEA Jolt product Web page at:

```
http://www.bea.com/products/jolt/index.html
```

These samples demonstrate and utilize Jolt features and functionality.

Other Web sites with Java-related information include:

- Javasoft Home Page (`http://www.java.sun.com/`)
- In addition, the newsgroups in the comp.lang.java hierarchy contain lists of past articles and communications regarding Java, and are a valuable source of archival material.

17 Post Installation Considerations for BEA Jolt

This chapter discusses post installation procedures, and includes the following sections:

- Installing JRLY After Normal Installation
- Uninstalling Jolt

Installing JRLY After Normal Installation

The following sections give instructions for installing JRLY.

Installing JRLY on UNIX

JRLY is a stand-alone process provided to run on the same machine as the Web server. On UNIX systems, no changes have been made, and JRLY functions as it did in previous versions of Jolt.

Installing JRLY on NT

On NT systems, when you install JRLY as an NT Service, BEA Jolt 1.2 registers the configuration file when NT boots.

On NT, if you do not install JRLY with the normal Jolt installation, but decide you want it later, you can install it through configuration on the command line with the following command:

```
1. jrly -install [display_suffix]    //registers JRLY

2. jrly -set [-d display_suffix] -f <config file>     //registers
                                          //configuration file

3. jrly -manual [display_suffix]      //sets start/stop to manual

   or

   jrly -auto [display_suffix]       //Sets the start/stop
                                     // to automatic
```

Uninstalling Jolt

The following sections describe how to uninstall Jolt.

Uninstalling Jolt From NT

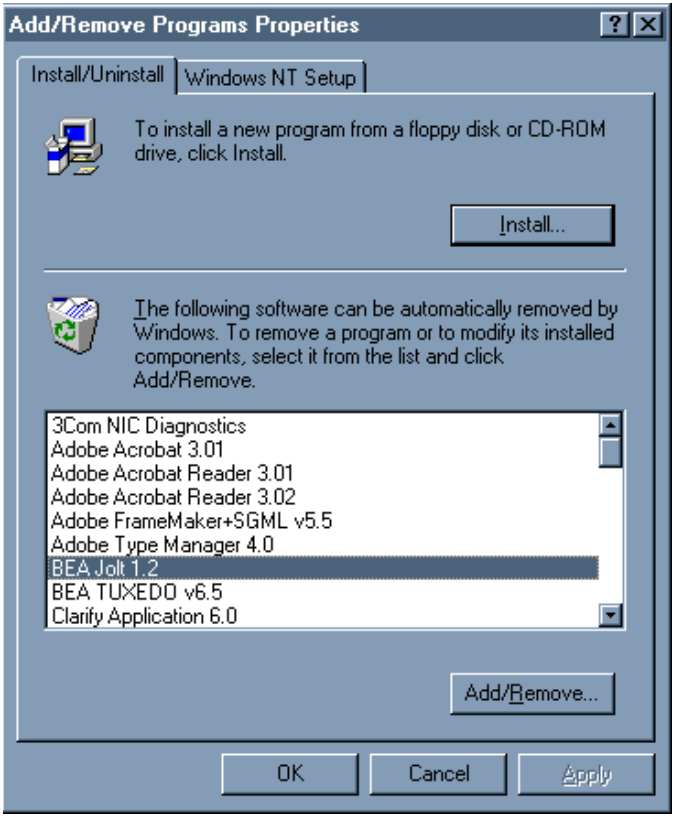
To remove Jolt, follow these instructions:

1. From your **Control Panel**, select **Add/Remove Programs**.

   The **Add/Remove Programs Properties** dialog box appears (See Figure 4-1).

2. From the list of programs shown, select “BEA Jolt”.

Figure 17-1 The Add/Remove Programs Properties Dialog Box



3. Click on the **Add/Remove** button.

   A confirmation box appears and asks if you really want to remove the selected application.

4. The **Remove Programs from Your Computer** dialog box appears and the program is removed.

   When the program has been removed, the following message appears in the dialog box: “Uninstall Successfully Completed.”

5. Click the **OK** button.

6. Click the **OK** button in the **Add/Remove Programs Properties** dialog box.

   Jolt has been removed.

Uninstalling Jolt From UNIX

Currently, there is no script for uninstalling Jolt from UNIX. You can, however, uninstall Jolt from your UNIX system by removing the applicable files and directories.

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